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PAPER TRADE JOURNAL

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PAPER

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Paper Production Increases During September

Shows Gain of 3 Per Cent for the Month as Compared With August According To Reports From Identical Mills Submitted to the American Paper and Pulp Association — Most Grades of Pulp, However, Showed Decreases in Production for September As Compared With the Preceding Month

According to identical mill reports to the Statistical Department of the American Paper and Pulp Association from members and cooperating organizations, the daily average paper production in September showed a 3 per cent increase over August 1930, and a decrease of 15 per cent under September 1929. The daily average wood pulp production in September registered practically no change from August 1930, and a decrease of 13 per cent under September 1929.

The September production of news print, uncoated book, paper board, wrapping bag, writing, tissue and hanging registered a decrease under September 1929 output. The production of all major grades of paper during the 9 month period ending September 1930 registered decreases under the totals for the same period of 1929. Shipments of all major grades also decreased during the 9 month period of 1930 as compared with the same period of 1929.

All grades, excepting wrapping, hanging and building papers, showed increases in inventory at the end of September 1930 as compared with the end of August 1930. As compared with September 1929, increases in inventory were registered in the following grades: news print, uncoated book, writing and tissue papers.

Identical pulp mill reports for the 9 month period ending September 1930 indicated that 6 per cent more mitscherlich sulphite pulp and 1 per cent more kraft pulp was consumed by reporting mills than for the same period of 1929. The total shipments of all grades of pulp to the open market during the first 9 months of 1930 were approximately 10 per cent below the total for the same period of 1929.

All grades of pulp, excepting bleached sulphite, easy bleaching sulphite, kraft and soda pulps, registered decreases in inventory at the end of September 1930 as against the end of August 1930. As compared with September 1929, soda pulp was the only grade whose inventory registered a decrease.

REPORT OF PAPER OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF SEPTEMBER, 1930

Grade	Production tons	Shipments tons	Stocks on hand end of month tons
News print	95,261	96,048	30,879
Book (uncoated)	67,708	63,210	64,364
Paper board	180,152	180,108	59,091
Wrapping	42,581	44,415	41,457
Bag	12,070	11,828	5,017
Writing, etc.	25,286	23,996	53,709
Tissue	11,916	11,821	12,897
Hanging	4,531	5,132	5,672
Building	6,955	7,141	2,839
Other Grades	19,748	19,788	15,456
Total—All grades	466,208	465,487	291,381

REPORT OF WOOD PULP OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF SEPTEMBER, 1930

Grade	Production tons	Used during month tons	Shipped during month tons	Stocks on hand end of month tons
Ground wood	64,044	68,969	2,303	69,413
Sulphite news grade	30,507	29,163	1,429	7,308
Sulphite bleached	24,648	22,905	1,437	4,604
Sulphite easy bleaching	2,772	2,471	256	1,076
Sulphite Mitscherlich	6,672	5,918	824	1,795
Kraft pulp	29,283	25,223	3,692	7,113
Soda pulp	19,476	12,732	6,693	3,330
Pulp—Other grades	64	.....	75	8
Total—All grades	173,466	167,383	16,709	94,647

Hawley Pulp & Paper Co. Makes Good Showing

Hawley Pulp and Paper Company in the past four months has earned more than sufficient to pay the preferred stock dividend for the entire year, according to a statement received here yesterday from company officials.

Net profits have held up remarkably well in this period of depression, the statement continues, and with manufacturing economies that are being effected every month the position of the company is sound. September sales not only show a good gain over those of August but are ahead of those of September, 1929.

Recent reduction in news print prices does not alarm the management, the statement declared, and only a small percentage of the Hawley production is effected.

"As far as the Hawley mill is concerned, only a small percentage of the total production is effected," said the statement. "In the last few years we have disposed of a considerable tonnage, which has entailed a long freight haul, and it is our expectation that this will be largely replaced with Pacific Coast tonnage having a low freight rate."

No earnings figures are included in the statement, as the company does not make a practice of issuing interim statements.

More Interest in Swedish Wood Pulp

WASHINGTON, D. C., November 12, 1930.—Evidences of renewed interest in Swedish wood pulps were shown during the early part of October.

Aggregate sales during the first week of October were estimated to be not over 20,000 to 25,000 metric tons for both 1931 and 1932 delivery. Sales in the preceding week had totaled something like 40,000 tons about half of which was kraft pulp sold to American buyers at the low price, it is reported, of $1.65 ex dock.

Paper Demand Expanding in Philadelphia

While Business Is Still Sub Normal It Is Improving and Demand Is Expected to Broaden Considerably During the Next Few Weeks—More New Papers Are Being Offered Than In Some Time Past, Especially in the Fine Paper Division of the Market

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., November 3, 1930.—Paper demand is expanding and while there still is lacking a normal purchasing power among the consumers inquiries are extending and business appears to be broadening in small lot orders for immediate consumption. Greater volume of paper requirements will be moving in the month as inquiries would indicate this trend in the paper market and consumers which are holding off watching for indications of livelier holiday business will then be in rushing need of all lines of wrapping papers and specialties.

Specialty Papers Hold Best Demand

Specialty paper dealers and manufacturers report a growing demand for such grades as are now needed for the coming holidays. Paper houses are campaigning on all lines of paper in order to clear up goods before the inventory. The wrapping paper distributors and those dealing in specialities have a well rounded assortment of holiday numbers that will be in demand for the Christmas season and dealers who cater to the greeting card manufacturers report excellent holiday orders at this time. Announcements are moving fairly well as the holiday offerings are sent to the public by mercantile houses and persistent advertising has promoted paper demands in such grades and in book and cover papers and allied stocks among the larger distributors who deal in direct mill shipments or in volume distribution of these.

New Papers Offered

A pleasing indication of coming improvements in the industry is the mill offering of new grades of papers. These are chiefly in new numbers to fine papers. For the past year or so there has been a dearth of such offerings by manufacturers who have been prone to cling to old established grades and this resumption of new stocks has an encouragement in the belief that mills are preparing for expansion of business with the coming year.

Paper and Twine Merchants Meet

Members of the Philadelphia Paper and Cordage Association, who comprise the group of dealers featuring wholesale trading in paper and twines, met at the Adelphia Hotel last Friday and discussed the problems of credit with G. C. Taylor, special representative with the Credit Service Bureau, who gave reports on handling credits are they are carried out by the firm he represents. He went into the details of accounts and the problem of attaining efficient services, during the luncheon session. President George K. Hooper of the association was present as presiding officer and with 15 firms represented from the Philadelphia organization. At the meeting there was perfected a full program of activities for the remainder of the year, with interesting educational and business schedule which will be provided for through speakers whose efficiency on the respective topics are recognized by the trade. Charles Elliott, Jr., representing the Bennington Wax Paper Company, in the Philadelphia territory with offices in the Fidelity-Philadelphia Trust Building was admitted to membership in the organization.

To Build Up Wrapping Papers Division

With the launching of the campaign to build up the wrapping paper division of the industry in the local territory and to cooperate with the paper distributors in this effort the Philadelphia Paper Trade Association took initial steps in that direction at the get-together luncheon held at the Elks Club on Monday of last week when the dealers were the guests of George W. Ward, who extended the hospitality of dining table to the greeting of his associates at a house warming held in the new quarters of the D. L. Ward Company, in the Terminal Commerce Building, Broad and Callowhill streets. After a trip over the new quarters of the D. L. Ward Company on the second floor of the new structure the wrapping paper dealers adjourned to the Elks Club just across the way and there after participating in the luncheon were given an outline of the plans for promoting the interests of the wrapping paper distributors through co-operation of the association in the coming year and by inauguration of the first steps through strengthening the group of Philadelphia dealers in united efforts of the organization. Among those present were George W. Ward, as host and speaker, president W. S. Wilcox, of the Philadelphia Paper Trade Association and of Wilcox, Walter, Furlong Company, Norbert A. Considine, Paper House of Pennsylvania and as representing the National Paper Trade Association, Frank Floyd, its secretary who came here especially to talk on the topic of wrapping paper and the plans for united efforts to stabilize and development of this branch of the industry.

National Paper Trade Association To Unite

The building of the wrapping paper business and the welfare of its associates will have the co-operation of the National Paper Trade Association as announced by Secretary Frank Floyd who was the main speaker on the subject of stabilizing business through united interests. Mr. Floyd laid before the trade the policies of the national group along these lines. He stated that this could be accomplished only through better organization among the local dealers and that the National Association was solidly behind the local group in this plan to build up the personnel as well as the business of the wrapping paper division. He was followed by discussions given through the local trade associates, president Wilcox having been the leader and in turn Norbert A. Considine of the Paper House of Pennsylvania, who is one of the most enterprising of Philadelphia workers in behalf of the Association, and who despite the many responsibilities that have been placed on him through illness and cares incident to these handicaps has not lagged in his zeal of promoting the welfare of his associates in the organization. All stressed the importance of better organized effort and urged the dealers to band for the mutual benefit of the industry and their personal interests. They urged their associates to greater attention and consideration of united work for the upbuilding of business in the wrapping paper division and the stabilizing of that section of the trade in the local territory. To this end a committee was appointed to provide for the reorganization of the wrapping paper division and to promote activities along such lines. Those who were appointed to the committee are Frank A. O'Neill, Paper Manufacturers Company; T. H. B. Smythe, J. L. N. Smythe Company; W. W. Seary, D. L. Ward Company; Charles A. Wilder, Wilder Brothers; Simon Walter, S. Walter, Inc., and Joseph Weaver, Garrett-Buchanan Company. A meeting was arranged to be held in mid-November when the wrapping paper dealers will invite their associates in the Philadelphia Paper and Cordage Association, to join in the session and when definite recommendations will be made through the committee and presented to the entire wrapping paper associates of both organizations which will aid in the development of the policies that have been formulated for the best interests of all and the advancement of profitable wrap-

ping paper business and to establish order out of the present chaotic conditions through co-operation.

Cy Norton Addresses Printers and Advertisers

Under the auspices of the Paper House of Pennsylvania, 30-32 N. 6th street, there was held a special Strathmore Meeting, at the Down Town Club to which were invited the advertising managers of department stores and the printers in the Philadelphia territory. Cy Norton, assistant advertising manager of the Strathmore Paper Company spoke on the papers of the mills he represents and outlined to the trade the numerous processes of production and the various Strathmore Papers and allied lines and the advertising uses of these for varied purposes. N. A. Considine presided, introducing the speaker, and extending a word to the allied associates in behalf of the Strathmore lines and their usefulness in the advertising and printing fields.

Active In Poor Richard Club

A series of interesting talks on the use of papers and educational topics on advertising, particularly direct mail, will be given this winter at the Poor Richard Club, the fraternity of Philadelphia advertising men, when George W. Ward, of the D. L. Ward Company, will address the members on the Graphic Arts Leaders Exhibit which will be shown here on November 20 and in the talks that are to be given under the direction of Norbert A. Considine, of the Paper House of Pennsylvania, who has provided for group meetings for the coming season, the first having been given on October 23 when Edwin B. George, Chief Market Servicing Division, U. S. Bureau of Foreign and Domestic Commerce, was the headliner on the program.

Hold Hammermill Session

Members of the Allentown Advertising Club were entertained in special Hammermill Night program, held at the Americus Hotel, in Allentown, Pa., when at a dinner session the guests and associates of the advertising trades of the up State city were given a lecture with moving pictures on "The Voice of Business," a special film which the Hammermill Paper Company has prepared for the promotion of sales on printing papers. This film gives a review of the history of paper making. The Hammermill program was arranged under the auspices of the R. P. Andrews Paper House, Lehigh Valley Division, of S. Walter, Inc., and through the courtesy of the mills and Simon Walter, head of S. Walter, Inc., 144 N. 5th Street, who also is head of the subsidiary company which is engaged in the distribution of fine and wrapping papers in the Lehigh Valley section and in York, Pa., through the branch in the latter city. The meeting was held last Thursday when Simon Walter, and Vice President Bertram Moore, who is in charge of branches attended with a staff of representatives from the Philadelphia and Allentown branches.

Stationers Celebrate Silver Anniversary

Members of the Philadelphia Stationers Association, joined in the celebration of the 25th Anniversary of the organization in a special Silver Jubilee held at the Bellevue Stratford Hotel when several members of the paper trade were guests. There were 250 attending. Mortimer W. Byers, Federal Judge of Brooklyn, N. Y. and one time secretary of the National Stationers Association was the leader in the many complementary addresses of the evening and went into the history of the organization of the local body and the long association he had with its members in the years of his affiliation with the national organization. He was followed by William Henry Brooks, of William F. Murphy Sons' Company, President Charles A. Connell of the Automatic Printing and Stationery Company, and head of the Philadelphia Stationers Association, Charles Garvin, manager of the National Stationers Association, Washington, D. C. offices, and W. J. Coane, who was given special recognition at the meeting for his work in organizing the group 25 years ago. Souvenirs were distributed among the guests by the Trussell Manufactnring Company, Wilson Jones Company, Waterman Fountain Pen Company and Doubleday Doran & Co., publishers.

Mather Paper Co. Exhibits Food Wraps

The Mather Paper Company, 611 S. Front street, tieing in with the Wax Products Company, New York City, conducted a special booth for the exhibit of papers adapted for use in the food industries at the Food Show held at the Commercial Museum during the last two weeks of November. The Mather Company is local distributor for these products and recently removed to larger quarters at the S. Front Street address.

W. J. McGarity, Jr., Manages Paper Division

William J. McGarity, Jr., son of William J. McGarity, Sr., head of the Penn Paper and Stock Company, 240 N. Delaware avenue, is now in active management of the paper house branch of that company located at 504 N. American street having taken over the duties of the former manager Leo McGibbeny, who has resigned to become associated with a brokerage concern. The paper house division located at the N. American street address has a large converting department for the handling of volume job lot purchases of paper in which the concern deals and which includes special lots of news print in volume, wrapping papers and printing papers. The younger McGarity has been active in the Wholesale Waste Merchants Association, of which his father is secretary. William J. McGarity, Sr. will continue as the active head of the Penn Paper and Stock Company, which deals in paper stocks and rags, and is one of the largest and oldest of concerns of its kind in this section of the country.

Arnold Hammersley Representing Hammersley Mfg. Co.

Philadelphia paper merchants have been informed that Arnold Hammersley, will in the future represent the Hammersley Manufacturing Company, of Garfield, N. J., in covering this territory. The former offices of the Hammersley Manufacturing Company located in the Drexel Building under William McKeever, have been discontinued and the business handled directly through the home offices and headquarters of the manufacturing division. The new representative for the local territory made his initial round of the trade in late November.

W. F. Woodward Manager of Seaman Paper Co.

W. F. Woodward, has been appointed manager of the Philadelphia offices of the Seaman Paper Company, Atlantic Building, and will have as assistant Wayne T. Ash, who for the past year and a half has been linked with the sale of the Seaman Paper Company's printing papers in this territory. C. W. Maglatlin, who was former sales manager of the Lindsay Paper Company, 804 Sansom street, is now affiliated with the Seaman Paper Company, New York offices as Eastern representative covering the jobbing trade.

George W. Ward Sails For Bermuda

President George W. Ward of the D. L. Ward Paper Company, Terminal Commerce Building, sailed last week for a two weeks sojourn in Bermuda, leaving on the Veedam. Mr. Ward stated he was making the trip for a much needed rest after the task of removing the extensive paper business from its old quarters to the new location in the Terminal Commerce Building, Broad and Callowhill streets in the past month.

Will Denver Get the Paper Mill?

DENVER, Col., November 6, 1930.—Rumors are afloat that the International Paper Company of New York is thinking seriously of erecting a pulp mill in this city, but no one has come out and made any positive statement either to affirm or deny. The only thing certain is that the company has enormous timber at its command located in the Rio Grande and San Juan forests of southwestern Colorado.

Canada Seeks Improvement for News Print

Plans for the Consolidation of the Industry Are Proceeding Slowly and Have Received No Set Back Other Than the Great Difficulty in Coming to Terms—Over Expansion of the Industry Reflected in Level to Which Price of News Print Securities Have Sunk

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 10, 1930.—Still another week has passed without any solution being found for the serious situation in which the news print industry finds itself. Plans for the consolidation of the industry under unified control are proceeding slowly, and have not received any setback other than exists in the great difficulty of coming to terms. Meanwhile suggestions are becoming stronger that the best solution may yet be found in the news print companies in Canada allowing news print prices to find their own level instead of in trying to bolster up an artificial situation by mergers. One large financial house here has come out with a market letter on this subject, suggesting that the price level may be found to be as low as $40 or $45 a ton. The contention is that at such prices many of the American mills could not continue business, and with their tonnage eliminated the more efficient mills in Canada would probably work to capacity, with fair profits. Then when a normal consumption returns it would seem possible, so it is argued, for them to raise the price of their product to such figures as would ensure them a good return and sufficient earnings to provide adequately for depletion and depreciation. The argument proceeds: "To carry out this plan it might be necessary for the companies to go to their security holder and ask them to be patient for a year or two, if it became necessary to defer the interest on outstanding securities, confident that a very few years would effect such changes as would adequately recompense them for any such temporary deferment. Such a plan may sound too drastic, but the experience of the producers of other materials who have attempted to fix artificial prices for their products by agreements among themselves, and even of governments who have attempted price fixing, has been so disastrous as to make this suggestion worthy of serious consideration by those controlling the destiny of the news print industry."

What Would Happen Under Unified Control

As against this, what would happen if the mills were brought under unified control? It is considered inevitable that production would be concentrated at a fewer number of mills and the higher cost mills closed down. With the lower cost mills operating close to 100 per cent of capacity, instead of at from 50 to 60 per cent, as now, cost of production would be much more economical and the unit of profit would be sharply increased. Even at that it would seem impracticable to expect the fewer mills, although operating more economically at a higher ratio, to produce enough profits to carry the entire load represented by the "frozen assets" of non-operating mills and the fixed charges on capital. Therefore it is thought that consolidation would inevitably be followed by a re-capitalization and pruning down of the present volume of securities.

It is doubtful if the investing public here realize fully the almost incredible extent of the over-expansion of the industry, but the prices to which news print securities have slumped are beginning to drive home to them the fact that something over and above the present general business depression is the matter with the industry. As instances of what has happened to news print securities, the following examples are quoted: Abitibi's first mortgage bonds have sold down from 106 to 70; its preferred stock from 102 to 37; Canada Power and Paper 5½ per cent debentures have dropped from 99 to one-third of this level (with interest being maintained and reasonably assured); St. Lawrence Corporation's $2 preferred stock "A" has slumped from about 28 to around 8; Brompton common from 71 to 12; Abitibi common from 84 to 9; Canada Power and Paper common from 55 to 4; and Price Bros. from 120 to 44.

Greatly Increased Capacity

The over-expansion which has brought about this result is reflected in the fact that in the past five years the Canadian news print industry has been called upon to expand its markets to absorb an increase in capacity of over 100 per cent, namely from 5,300 tons daily to 11,950 tons, or a yearly rate of 1,590,000 tons increased to around 3,500,000 tons. That consumption has increased in the interval is granted—it has increased remarkably—and did not begin to decrease in volume till this year. But whereas even at the end of 1925, the average daily output and sales came within 20 tons of installed tonnage, there is now a margin of over 2,000 tons a day, and, astonishing as it may seem, half of this margin has been created during the present year. Actually not a ton of the increased capacity of this year has been absorbed.

The daily output (representing approximately the sales) was 5,297 tons in 1925, when it came to within 20 tons of installed capacity. How consumption has grown in the interval is shown by the fact that the output even in June of this year was 10,143 tons daily, and although it has fallen off since, is still not far from that figure. But whereas the mills were running at 99 per cent of capacity in 1925, and almost as high in 1926, the ratio fell below 80 per cent in 1928, improved slightly in 1929, and then, with new machines coming into operation all the time, has steadily fallen until now some mills are operating 50 per cent and the average is probably not more than 60 per cent. Additions to surplus capacity, even in this year, have been at the rate of 375,000 tons per annum.

These are facts that are being gradually driven home to the investing public, with the result that securities in the enterprise have fallen to such a low level, even for this deflated market, that investment houses have begun to draw attention to them as outstanding speculative possibilities for those who take the long view. But added to the shadow of over-expansion has now been added the shadow of impending drastic reorganizations, and the view is growing that things may be worse before they become better.

An Example of the Uncertainty

An example of the uncertainty of the outlook for many mills in Canada is contained in the following statement just issued by R. A. McInnis, vice-president of the Canada Power and Paper Corporation, in regard to a report that the Company's Cap de la Madeleine unit, formerly St. Maurice Paper, was to be closed down in the near future, possibly for a year. The statement reads:

"No definite decision has been made by the company to shut down the St. Maurice mill. On the contrary, the officials are working night and day with the idea of keeping all the mills of the company running.

"The situation is that the St. Maurice mill has been running at fairly full capacity during the summer on boat shipments, but at present has only sufficient orders to run for three weeks out of the next two months. Despite that we have managed to transfer other tonnage to give the mill at least another two week's run. It is difficult to say at this time what we are going to be able to do for the winter months other than to state that we are doing everything we can to secure orders for the mill."

Your competitors' salesmen are telling paper buyers: "Look what a fine clean sheet this is."

Why? Because it is a fine clean sheet. It is Centrifined paper.

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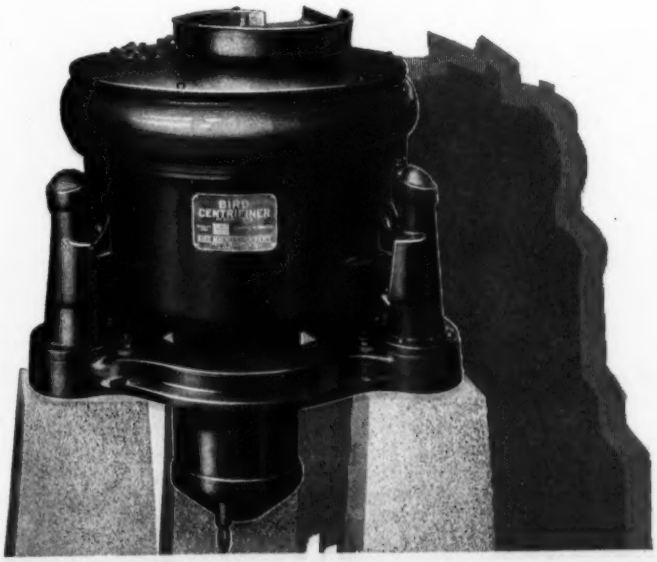

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Freight Cases Dropped in Fox River Valley

Petition of Southeastern Carriers To Re-open Minnesota and Ontario Case as Well as Similar One Filed by the Central Freight Association Is Denied—Safety Meetings Being Held in Almost All Wisconsin Mills Are Meeting With Big Success.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., November 10, 1930.—Increase in freight rates on paper shipped from the Fox River Valley apparently are dropped from consideration for the time being, following decisions by the Interstate Commerce Commission. A petition of the Southeastern carriers to re-open the Minnesota and Ontario case was denied, as well as a similar one filed by the Central Freight Association.

The principal objection to the reopening was the fact that the petitioning lines did not serve paper manufacturers in the territory covered in the Minnesota and Ontario case, and apparently wanted the Fox River rates raised so that the C. F. A. territory rates would not be lowered.

Objections to the re-opening were filed by the Minnesota and Ontario Paper Company, the original complainant eight years ago, by the Fox Paper Company, the Menasha Products Company, the Wisconsin Paper and Pulp Manufacturers Traffic Association, and many others. This was the last petition pending against the Minnesota and Ontario case, and its denial makes Fox River rates safe for a while.

Fire Prevention in Wisconsin Forests

Fire prevention, the cause of vast timber losses in Wisconsin, is having uppermost consideration in the planting of 2,000 acres of trees in the newly created Moquah National Forest, in the northern part of the state. Each tract of 160 acres is completely surrounded by a 30-foot fire line with a sand rut road in the center so as to make access convenient. Each section of 640 acres is surrounded by a 46-foot fire opening, with a graded road in the center. These fire lines are kept clear of brush, grass and stumps and make it possible for rangers to reach any section and confine the fire to a small area where the damage will be slight. Steel lookout towers will be placed at each end of the area, and supplied with telephone wires to the headquarters of the rangers.

Planting has been started on an experimental basis in the Flambeau National Forest. Seedlings to the number of 6,000 will be set out, of which 3,000 were furnished from the nursery of the Nekoosa-Edwards Paper Company. These are mostly white spruce, Norway spruce and Norway pine, all two years old. These seedlings will be planted on all types of soil and under varying conditions, so as to discover what the area is best adapted to in growing future timber.

Hold Successful Safety Meetings

Safety meetings are being held in almost all of the paper mill centers in Wisconsin this fall, with good success. Most of them are city-wide, having grown from a paper mill project to a community one. At Wisconsin Rapids and Eau Claire, the speaker last week was Garrett Burgess, vice president of the King Refractories Co., Buffalo, N. Y. He said 248 workers are cut down per day, and 90 per cent of these accidents could be eliminated. It has been found that most of them happen in the early hours of the day, when the worker apparently has his mind on the events of the evening before. Dr. Ernest Corn, of the National Safety Council, will be next week's speaker.

Study River Pollution

River pollution, the subject of controversy for years and now a subject of co-operative study between the Wisconsin Board of Health and the paper mills, may be eliminated by the building of sewage disposal plants. Mayors of Fox River Valley cities have organized an association, with Mayor B. W. Fargo, of Kaukauna, as chairman, and have discussed this problem in their sessions.

It has been the purpose of the mayors to obtain permission of the federal government to raise the level of Lake Winnebago 6½ inches, so as to store up more water for use in the dry period of midsummer. At that time pollution becomes a serious problem, and adequate flowage would keep the Fox River flushed out.

The suggestion was made to these cities by Adolph Kannenberg, chairman of the Wisconsin Railroad Commission, that metropolitan sewer districts be established, with intercepting sewers leading to a central disposal plant. This would be more effective than trying to raise the lake level, it was said.

At the same time a report was issued by L. F. Warrick, state sanitary engineer, showing that sulphite waste discharged in the river does not poison fish. It causes depletion of oxygen, and that is what causes the trouble, it is said. Experiments were conducted last summer by A. E. Cole, for the state. He tried mixing sulphite liquor with water in tanks where live fish were kept and studied the effects. Fish lived for a month under a concentration of one part of sulphite waste liquor to 200 parts of water and showed no ill effects. Further studies are planned so a solution of the problem may be reached in the near future.

Protection Against High Water

One of the dikes at the Consolidated Water Power and Paper Company's dam at Wisconsin Rapids, Wis., is being raised a foot so as to give greater protection against high water. The removal of abandoned switch tracks formerly following the course of the river made the improvement possible. About 2,000 yards of dirt will be used for the filling in.

An Unusual Compensation Case

Whether injuries suffered in a fight while on duty at the mills of the Kimberly-Clark Corporation, Neenah, Wis., constitutes a claim for workman's compensation is to be determined by the Wisconsin Industrial Commission. Ross Cucci is claiming compensation. He claims that in a fight with Norbert Forster while on duty, he was knocked down and his skull was injured. A hearing is to be conducted by the commission, after which the testimony will be studied for a decision.

Menasha Paper Corp. Makes Improvements

Extensions and improvements in the rotary machine department are being made by the Menasha Paper Corporation, Menasha, Wis. A story unit will be erected 48 by 96 feet in size. The general contract has been awarded to Anton Nielson, Neenah, Wis. Much overhauling has been done in the mill preparatory to resuming operations on straw board. This company purchased the assets of the defunct Menasha Paper Mills Co.

L. C. Reynolds To Be Principal Speaker

HOLYOKE. Mass., November 11, 1930.—L. C. Reynolds, assistant to Sidney L. Willson, President of the American Writing Paper Company, Inc., will be the principal speaker at the November meeting of the Purchasing Agents Association of Western Massachusetts at the Hotel Nonotuck, Thursday night. A dinner will precede the meeting.

Downingtown Adjustable Suction Roll on wet felt of a seven cylinder Downingtown Board Machine. ✓ An installation such as this has many advantages. ✓ Downingtown Suction Rolls are built for Cylinder and Fourdrinier Machines for Couch and Press positions, and if desired, can be of the cantilever construction. ✓ For further information address the Downingtown Manufacturing Company, Downingtown, Pennsylvania.

Chicago Paper Market Shows Improved Tone

Definite Betterment in Demand, However, Is Not Expected Until After the First of the Year—Container Corp. of America Earns 83 Cents Per Share for First Three Months of 1930 As Compared With 15 cents Per Share For Same Period Last Year

CHICAGO, November 10, 1920.—While the mysterious "under tone" in the Chicago paper market seems to be definitely improved jobbers, manufacturers representatives and all seem to feel that the first flush of genuine improvement will not be noticed in these parts until at least after the first of the year. A hectic political campaign upset the apple cart a bit here but otherwise salesmen are giving their very best to insure proper commitments for 1931. Even the organization activities have suffered as this month is being considered the period that will make or break next year from a business standpoint. The high grades of paper are holding on in good shape with prices steady and there is every reason to believe that they will continue to do so, say reports. In the lower grades there is more confusion and a "buyers market" seems to be all the rage. Board is yet considered one of the most overproduced of commodities as mills are operating only sufficiently to fill immediate requirements. Some seasonal business is breaking out as the holiday season approaches but, inasmuch is most of this was contracted for some time ago, chief interest centers on the business obtained now for 1931 use.

Story of Fiber Shipping Containers

An interesting story of corrugated and solid fiber shipping containers written by Ray Wantz, president of the Rockford Fibre Container Company, is contained in the current issue of Manufacturers News, published in Chicago. Mr. Wantz gives a history of corrugated and solid fiber containers beginning back in 1871 with the invention of A. L. Jones which made possible the making of corrugated board. In 1900, says Mr. Wantz, some wooden box makers and some paper mill operators added corrugated boxes to their output but it was not until 1913 that fiber containers were given equality with wooden boxes in transportation circles. In 1929, the article says, the total output in the United States was 1,281,000 tons of corrugated and 709,900 tons of solid fiber containers.

The cause of this growth, says Mr. Wantz, lies in the adaptability of the product. Fiber boxes, made from waste paper stock, straw and new chemically prepared wood pulp, have a fairly low cost of production. Therefore the initial cost for the shipper of an average-size fiber box is less than that of other types. This, with less weight, lower packing costs and less floor space for storage, is helping much to add to the popularity of the containers. Each manufacturer, we read, has one or more men on his staff trained to devise packages to meet even the unusual requirement where articles difficult to back are encountered. It is this eager search for new uses which gives promise to the industry. In concluding his interesting article, the Rockford executive lists some new uses of containers in the textile trade, in the shipment of frozen foods, in shipping radios, etc. Safety in transit, convenience in each step of the containers travels and net cost are mentioned by Wantz as the prime requisites of the corrugated and solid fiber container that are making them increasingly popular from the shippers standpoint.

Container Corp. Reports Profit

The most recent report from the Container Corporation of America for the nine months ended September 30, 1930, shows a net profit of $416,012 after depreciation, federal taxes, etc., equal after dividend requirements on $1,909,100 in 7 per cent preferred stock to 83 cents a share, per $20.00, on 381,345 shares of class A stock. This compares with a net profit in the first nine months of 1929 of $441,922, equal after dividend requirements on 7 per cent preferred and Class A shares to 15 cents a share on 588,289 no par shares class B stock outstanding.

Plans for Paper Board Meeting

The Paperboard Industries Association, through H. S. Adler, secretary, this week issued the schedule for the annual meeting of the Association to be held at the Commodore Hotel, New York City, November 18, 19 and 20. Chicago members of committees have received announcements to the effect that meetings of the Sales Promotion, Statistical, Trade Practice Administration Industry and Trade Practice Administration Board of Directors committees are slated for the morning of November 18. The Paperboard and Container Groups have been notified of group meetings on Wednesday morning, November 19 and the Folding Box members in Chicago will attend the meeting of that group on the morning of November 20. The annual dinner is to be held at 7:00 P. M. the evening of November 19. Election of officers is adding a great deal of interest to the meeting.

Chicago Paper Association Banquet

One of the big annual events in Chicago paper sales is the yearly banquet of the Chicago Paper Association which is scheduled for Tuesday evening, November 18, at the Bismarck Hotel, Chicago. Officers for the ensuing year will be elected at this meeting and the entertainment will largely be provided by talent from within the membership itself. An evening of fun preceded by an excellent Bismarck Hotel dinner is assured the large number of members, salesmen and guests who will be present.

General News of the Trade

From Harold Knott, president of the local division of the Salesmens Association of the Paper Industry, the report comes that there is little likelihood of any special Monday program features for the members until after the first of the year. Mr. Knott states that the salesmen are so busy making special efforts to line-up commitments for 1931 that they are even reticent to take the time for the regular Monday noon luncheons at the Hamilton Club.

Members of the Illinois Manufacturers Cost Association of Chicago recently spent an entire day in visiting the plants of the Gerlach-Barklow Company, Joliet, calendar and novelty manufacturers, and the Morris Paper Mills of Morris, Ill. The executives studied the production methods throughout the plant with special interest evidenced in the box-stitching deparment of that organization where suit boxes are formed of paper made in the mills from boxboard.

James H. Coy, representative in this territory of the Flambeau Paper Mills, will return on November 10 from a well earned two weeks vacation down Florida way. Mr. and Mrs. Coy were reported to have motored to the winter resort section, visiting at several points of interest en route.

The Jefferson Paper Bag Company, recently organized, has leased for a period of years a one-story building containing 17,000 square feet of floor space at 6525 S. Lorel Avenue, Chicago, in the Clearing Industrial District. Machinery is now being installed for the manufacture of paper bags with a production of approximately 2,500,000 paper bags per day scheduled.

"I'll need all of these letters by 5 o'clock Miss Keys"

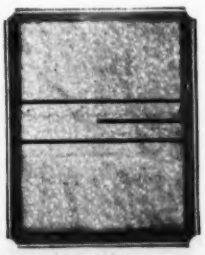
TODAY we dictate our instructions and letters into a machine. A stenographer takes them off and pounds them out at the rate of 60, 70, 80 words a minute

Our grandfathers actually, as well as literally, took their pen in hand. The copy books of the day testify to the laboriousness of letter writing. If speed was emphasized, legibility suffered. And many was the problem left to solve itself for want of a letter.

But great as is this difference between the typewriter and dictating machine and long hand, it is no greater than the difference between the first felt made by Shuler and Benninghofen in 1858 and the Hamilton Felt you use today.

In every Hamilton Felt is the experience gained in these 72 years. It is this experience that dictates the entire process of making these felts which combine strength with great water removing qualities; that save in steam and production costs; that wear longer and produce better paper with less down time for washing; that make money for the wise manufacturer who uses them.

Your check sheets will show you how much this experience means to you. After your experience with one Hamilton Felt you'll be satisfied with nothing else. Try one.



Hamilton Felts are marked by two blue lines full width of felt and by one blue line midway between them.

Hamilton Felts

SHULER & BENNINGHOFEN, Hamilton, O.

Miami Woolen Mills *Established 1858*

Ontario Paper Mills Look For Better Demand

Business Is Still Spotty But There Has Been Some Improvement and A Considerable Betterment Is Expected as the Fall Advances—Fine Paper Mills Are Comparatively Busy and Tissue Mills Are Quite Active—Abitibi To Close Sault Ste. Marie Mill

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., November 10, 1930.—Spotty conditions continue to prevail in both the wholesale and mill ends of the pulp and paper trade in Ontario, although in both sections sales are averaging up considerably better than they have been doing for some months past. There is still a lack of orders of substantial size and buying for the most part is pretty much of a hand to mouth variety. None of the printing or other sources of paper consumption are buying beyond their needs of the moment, although these needs are gradually increasing and on the whole there is a much better tone to the paper market than there has been so far this fall. As business conditions generally improve—and they are improving—the paper industry will be about the first branch of business to experience the expected revival and there are already signs of returning prosperity in all branches of the trade, save the newsprint department which is still unsettled. A moderate demand for most lines of fine paper exists in wholesale circles and there has been some slight improvement in coarse papers, although dealers in wrappings and paper bags could do with a considerably larger volume of business than they are getting just now. The general condition of business throughout the province has not sufficiently improved to create a normal demand for coarse papers by the retail stores and other consuming sources but it is believed that the worst of the depression is past now and from the present on there should at least be a fairly good call for both fine and coarse papers by the consuming trades. Distribution of cover and fancy papers is fairly active with quite a good demand for these products and there is quite a fair call for manilas and Canadian-made blanks.

Fine Papers Better Situated

Although there are comparatively few orders ahead of the fine paper machines the mills are displaying quite a good degree of activity, with the situation generally being described by the mill men as spotty. Unlike a few months ago, when mills could boast of orders a month or two ahead, machines are now running on stock, orders for which have been received a week or ten days previously. Sales executives cannot now keep orders filed at the mills calling for stock to be made a month or two hence. In other words orders are pretty well up to the machines each week and while fair tonnages are being secured it is practically all for immediate delivery with no guarantee that next week will produce sufficient orders to keep the mills up to full capacity.

Light Weight Papers Active

A few branches of the paper manufacturing trade are quite busy. Light weight papers, for instance, are enjoying really good business, and the mills are operating at capacity under a good call for all lines of tissues, toilets and specialty lines. The coated paper trade is fairly busy and the book paper mills have orders booked ahead for a week or ten days. On the other hand the demand for glassine, greaseproof and waxing papers has not improved and they are moving slowly. There has been little improvement in business for the paper converters, envelope manufacture and general stationery lines being distinctly quiet. Paper box manufacturers, while far from their old-time prosperity, are showing more activity and demand for packaging of all kinds is gradually increasing. It is worthy of note that the new anti-dumping provision imposed by the new tariff schedule recently inaugurated at Ottawa has resulted in paper box manufacturers receiving many enquiries and some orders from firms previously buying boxes in the United States. It seems fair to assume that there will be less competition in the future from across the line in which case the Canadian paper box men should reap material benefit from the tariff readjustment.

Little Change in Board Situation

There has been little change in the board situation. Mills are slightly more active and are placing some nice business with the paper box trade. The board market, however, is still suffering from over-production, and it will be a while yet before the trade gets back to a solid foundation again. Both the Dominion and Canadian Paperboard companies operating in Toronto report slightly increased activity and express the belief that the market will soon right itself.

Some Improvement in Pulpwood Trade

Some of the mills report signs of renewed activity in pulpwood circles generally throughout Canada with a slightly stronger market. There is evidence of a distinctly better feeling among the sulphite pulp manufacturers. A couple of the leading mills, at any rate, are noticing a somewhat better call and shipments have been increased materially during the past few weeks. A slackening of demand was noticed last year a couple of months before the situation got really serious. Allowing a similar time interval for more substantial recovery, it would seem that the pulp manufacturers would be justified in looking for definite improvement during the next few months.

Paper Producers are Optimistic

Optimism prevails among officials of Provincial Paper Limited at Georgetown, near Toronto, since the change in Government at Ottawa, that Canadian paper mills are likely to profit by the change in fiscal policy towards American manufacturers. During the King Government regime although there was a tariff of 35 per cent against paper imported into the country, papers and magazines which published agricultural matter were refunded 80 per cent of that tariff. With the return of the Conservative party, Canadian paper manufacturers have been informed that the levy will be enforced to the letter, without any refund, without reference as to what matter is published. W. V. Grant, manager of the Provincial mill at Georgetown, states that in 1928, when Canadian publishers realized they were to benefit by this 80 per cent return, the amount of paper imported into Canada increased from $80,000 to $800,000. Under the new policy, Mr. Grant believes Canadian paper, instead of American paper, will be used for Canadian publications, and that Canadian producers stand to enjoy a large increase of business therewith. The history of Provincial Paper, Limited, goes back to the earliest days in Georgetown, the first building of the plant having been erected by Barber Brothers in 1854. The plant can now handle 15 tons of paper per day. James Scott, who recently finished a service of 67 years with the company, tells of lifting the paper by hand from the frames when he first started to work as a boy of ten. Work was done in winter by candle-light, steam for drying the paper was produced by burning wood, and only 23 to 25 hands were employed. Paper was made entirely from rags and the process was a slow and laborious one. Edward McWhirter, superintendent, has a service of 43

Want tissue with an eye-appeal?

. . . . *Look!*

DO YOU want brilliance . . . eye-appeal . . . and still keep dye costs in line? You can get them in a wide range of colors without sacrificing du Pont tested quality.

A complete line of du Pont dyes for better-colored tissue gives combinations for every color. Gives you a chance to standardize on one line and so gain the value of uniform results.

Examine a few of the dyestuffs in this line:

Du Pont Orange RO gives brilliant red-oranges of considerable fastness. It has the advantage over other acid oranges of being non-foaming. Used in combination with acid or direct yellows, it will produce any shade of orange.

Du Pont Auramine O gives unusual brightness at a cost far below that of acid yellows of similar shade, when no special fastness to light is required.

Du Pont Methylene Blue ZX gives clear blue shades which hold their brilliance under artificial light.

Du Pont Victoria Green Small Crystals used alone give many attractive shades of green. With Du Pont Auramine O, bright yellowish greens are made; with Du Pont Chrysoidine GN or the Du Pont Basic Browns, olive green shades. A very economical combination is made with Du Pont Methyl Violet NE for producing deep blues.

Du Pont Victoria Blue BX is the brightest of the basic blues. It is very economical where fastness to light is not desired.

These are but random mention. Let us tell you more about du Pont dyes to fit your need, or make specific recommendations on your color problems . . . Our technical men are experienced and their laboratories are well equipped to render you service. Write direct, or to the branch office nearest you.

DU PONT DYESTUFFS

E. I. DU PONT DE NEMOURS & COMPANY, INCORPORATED

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Sales Offices in: Boston, Mass., Charlotte, N. C., Chicago, Ill., New York, N. Y., Philadelphia, Pa., Providence, R. I., and San Francisco, Calif. Represented in Canada by Canadian Industries, Limited, Heavy Chemicals Division, Sterling Tower, Toronto, Ontario, Canada

years with the company. He too, recalls days of steam produced by burning wood. Now, the drying steam is produced from coal, 12 tons per day being required. Hydro power has replaced steam for driving the machinery, 350 to 400 horsepower per day being required. Some power is generated from the Credit River. Incidentally Provincial Paper Limited, in 1888, produced the first electrical energy in Canada, to be applied to factory use, by damming the stream. Mr. McWhirter tells of a monthly payroll of from $800 to $1,000. Now the payroll amounts to over $6,000 per month. This is in part due, of course, to increased scale of wages. With Mr. McWhirter in the factory are Charles Burnsides, with 43 years service behind him and Charles Hore with over thirty years on the payroll. Fifteen years ago, a large quantity of newsprint was turned out by the mill but it is no longer among the products manufactured there. Featherweight and antique are two of the stock papers most in demand. Products of the mill are taken to the coating mill in the same place and are there shaped for use in catalogues, calendars, programs and window cards. The basic principle of paper-making in the mills is unchanged since the Barber Brothers instituted the industry and received a patent on the first sheet of paper, it is said, ever to be made in Canada. Provincial Paper took over the business some fifteen years ago. R. B. Foulis is superintendent of the coating mill.

Buntin Reid Co., Ltd., to Build

It was announced in Toronto a few days ago that Buntin Reid Co., Ltd., one of Toronto's oldest wholesale paper houses, had purchased property at 117-125 Peter street, immediately south of Richmond street, on which a new and modern paper warehouse and offices would be erected. Demolition of existing buildings on the site will commence at once and work will go on throughout the winter. The firm have been operating at 15 Colborn Street for many years. Working plans for the new building are now being prepared. The property measures 100 by 165 feet.

Ontario Flying Service New Record

When the flying season is completed the Air Operations Department of the Ontario Forestry Department, guarding timber and pulpwood in the northern districts, will have established a new record of over 14,000 hours flown during the year, Capt. W. R. Maxwell in charge, stated. The highest previous total was in 1929 when the airmen rolled up a total of 11,600 flying hours. Reports filed at the department covering air operations till October 15 show a total of 13,945 hours flown. The flying operations are not yet complete, and there are some reports yet to come in, so that Capt. Maxwell is confident that the total will reach 14,000. To date six operating bases have been closed. They are Lake St. Joseph, Caribou, Shenandowan, Twin Lakes, Remi Lake and Oba Lake.

Soo Mill To Close November 15

George R. Gray, vice-president of the Abitibi Power and Paper Company, stated this week that the company's Sault Ste. Marie mill would temporarily close down on November 15. "It is necessary to do so owing to the decreased consumption of newsprint caused by the general depression in the United States," Mr. Gray said. He was unable to say how long the mill would remain closed.

Notes and Jottings of the Trade

Levi Cranell, who played a leading part in the development of pulpwood manufacture in Canada, is dead in Ottawa at the age of 88. He became associated with the Bronson Company of Ottawa in its early days and saw it develop into an important lumber producer and manufacturer of groundwood pulp.

W. E. Levan, of Toronto, has been appointed mill manager of the Spruce Falls Pulp and Paper Co., Ltd., at Kapuskasing. Mr. Levan is a young man who joined the forces of the Spruce Falls Company a few years ago. He is a son of I. H. Levan, inspector of Collegiate Institutes in Ontario, and saw overseas service in the Great War in the artillery division of the C. E. F.

Alliance Paper Mills, Ltd., head office Toronto, has just issued a most attractive folder, designed to exemplify both the splendid printing surface of "Alliance Folding Enamel" and also its folding qualities. Inside the folder is a beautiful illustration of Mount Robson in four colors.

E. Newell, president of Dominion Envelopes and Cartons, Toronto, and of Dominion Boxboards, Ltd., has gone on a six weeks' trip to the British Isles.

Norman D. Bennett, of W. P. Bennett & Son, distributors of fancy papers and box wraps, has gone on a business trip to the Maritime Provinces.

Friends of Edward Nunn, chemist, recently with the pulp and paper industry in British Columbia, will be interested to learn that he has been transferred to a new plant. Mr. Nunn left British Columbia for the West Lynn plant of the Crown Willamette Paper Company, and has now been transferred from West Lynn to the Clamas mill of that concern.

Photographs of Abitibi Canyon were shown to the United Church Home Missions executive in Toronto a few days ago by Rev. John Cochrane, North Bay, in seeking permission for appointment of a missionary to the construction plant at that point. Authority was granted with 1,000 men in camp and their numbers likely to be increased to 2,000 as construction of the power plant progresses. Establishment of the missionary post was deemed advisable.

B. W. Wilson Dies from Self Inflicted Wounds

RICHMOND, Va., November 10, 1930.—Benjamin W. Wilson, wholesale paper merchant, died suddenly October 30 at Memorial Hospital, two hours after he had been found at his home with a self-inflicted bullet wound in his chest. Coroner S. J. Baker pronounced his death due to suicide.

Mr. Wilson participated actively in the business and civic life of Richmond and had a wide circle of friends, to whom his death was a decided shock. He had been at his office all morning and did not appear despondent, according to persons who saw him.

He was president of the B. W. Wilson Paper Company, Inc., which he founded about twenty years ago. He was also president until 1927 of the Richmond Corrugated Paper Company at 306 South Sixth street, which in that year was sold to another concern.

Mr. Wilson was a past president of the Richmond Rotary Club and a member of the board of directors of the Richmond Chamber of Commerce. He was a Scottish Rite Mason and took a large part in the building of Acca Temple.

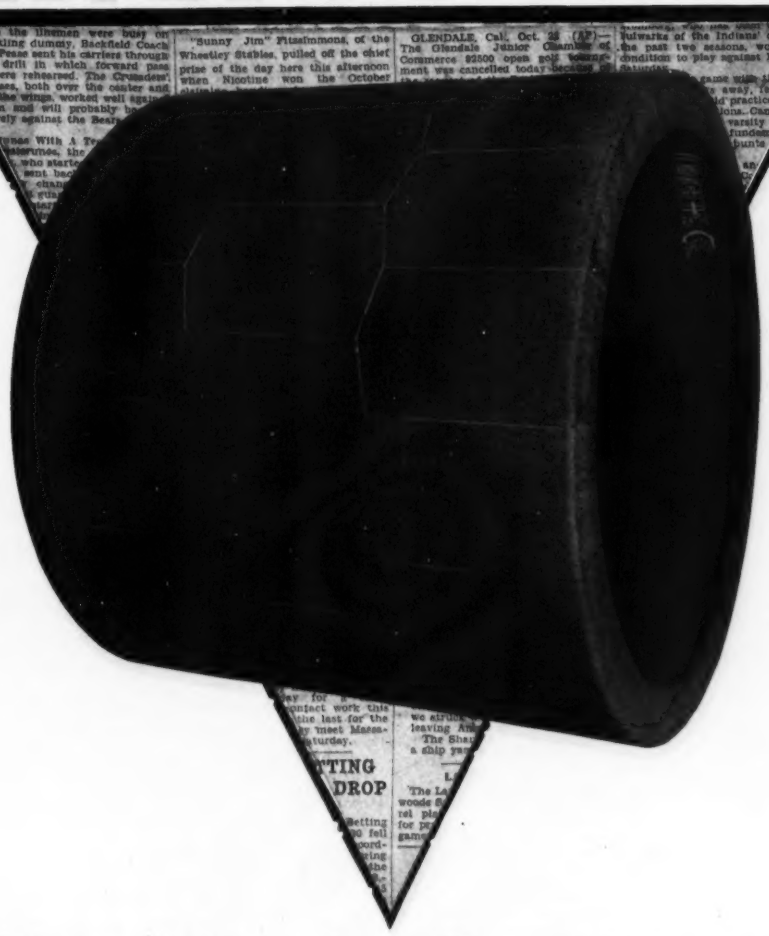
As a baseball enthusiast, Mr. Wilson's activities were widely known. Associated with Alvin M. Smith, Colonel Julien Hill, Dr. William H. Parker and others, he was a backer of the Richmond club in the International League from 1914 to 1917. Later he was sole owner of the Richmond club in Virginia League when it was established at the old Boulevard field in the West End.

Mr. Wilson was born in Richmond fifty-four years ago. He started business with the old Anderson-Wilson Paper Company, and later branched out for himself. He took an active part in the National Paper Trade Association.

Returning from the office to his home, 3406 Hawthorne Avenue, for luncheon yesterday, Mr. Wilson shot himself once in the left chest with a .32 calibre automatic pistol. Mrs. Wilson, who was ill at the time, heard the shot and summoned neighbors, who found Mr. Wilson on the floor of his bathroom. Dr. Warren S. Bickham treated him on the scene.

The City ambulance took the patient to Memorial Hospital where an operation was performed in the effort to save his life. He steadily weakened, however, and died at 3:45 o'clock.

NORTON PULPSTONE



Closer control of quality and freeness
Greater production
Reduction of waste
Uniformly lower stone cost

NORTON COMPANY — Worcester, Mass.

Canadian trade supplied from Canadian plant

Grinding Wheels
Grinding Machines

NORTON PULPSTONES

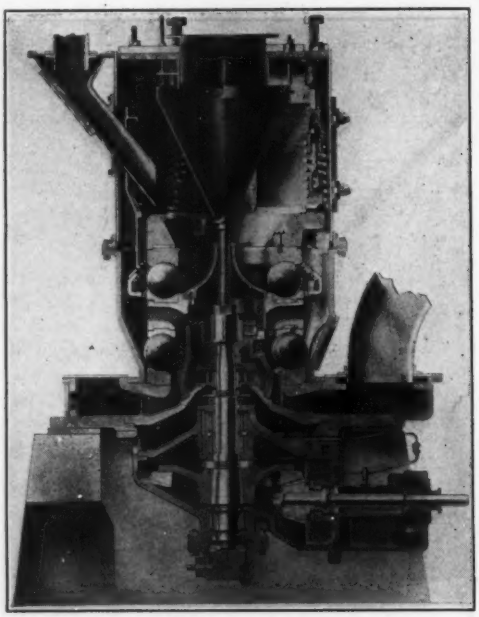
Refractories - Floor and Stair Tiles

New Pulverizer Has Simple Grinding Principle

The remarkable progress made during the past few years in burning pulverized coal has greatly amplified the need of a better and more efficient pulverizer. To meet this need the Fuller Lehigh Company, Fullerton, Penna., has recently placed on the market the new type B pulverizer.

This pulverizer is an air separation ball mill. It retains all of the desirable features of the well-known Lehigh Mill, including the spherical ball and grinding ring principle of pulverizing in which fineness is not affected by wear of grinding parts, and the absence from the grind-zone of parts that require lubrication.

Since the pressure between the balls and the grinding ring is an important factor in obtaining fineness and capacity, the new mill is so designed that this pressure, any amount desired,



CROSS SECTION OF NEW PULVERIZER

is obtained independently of the mill speed. This outstanding feature combined with the use of two full rows of balls grinding under high-pressure and at low speed results in a quiet and smooth-running mill which gives high capacity and fineness.

It has no metal-to-metal abrasion of grinding parts, therefore wear of these parts is practically the result of coal abrasion. The balls wear spherically and the mill has exceptionally low maintenance and power consumption. The power consumed varies with the coal feed.

The top section is of heavy steel plate and cast iron construction and contains the classifying cone, coal spout and the mechanism for adjusting the grinding pressure. The intermediate section is of heavy section cast iron with carefully machined flanges to which are fastened the top and base sections. The grinding elements, coal basket and driving yoke are mounted in the intermediate section.

The base or drive section is also of heavy section cast iron and provides a very rigid support for the mill. This section encloses the air distributing chamber, main and thrust bearngs, drive shafts and gears and the force-feed oiling system.

The grinding elements consist essentially of two rows of large diameter balls, two stationary and one rotating grinding rings. The rows of balls, one row mounted above the other, are separated and propelled by the rotating ring which is driven by and floats on the main driving shaft. Both the stationary and rotating grinding rings are made to gage in order to insure interchangeability. Grinding pressure between the balls and rings is applied and kept uniform by externally controlled steel springs mounted in the top section.

Operation of this pulverizer is quite simple. Raw coal, crushed to pass through a ¾ inch ring, is fed to the mill from an overhead bunker by means of an independent drag feeder. It drops through the feed spout onto a rotating cone inside the upper row of grinding balls whence it is thrown outward into the path of the grinding balls by the centrifugal action of the revolving cone.

After the coal is ground in the upper row of balls, practically all of it is fine enough to pass through the annular opening formed by the intermediate grinding ring and the coal basket. Any foreign and ungrindable material, such as tramp iron, pyrites and rocks entering with the coal, in rejected by the balls to the coal basket.

The pulverized coal, after passing through the annular opening, encounters currents of preheated air that enter the air distributing chamber in the base and are discharged through openings in the intermediate grinding ring. Fines are entrained and carried upward by the air stream, while the coarse particles of coal drop into the lower row of grinding balls for further pulverizing. Upon reaching the desired fineness the coal is carried upward by the air stream.

As the separating air currents sweep through the mill the fines are quickly removed from the grinding zones. The air streams move upward, inside and through the lower rows of balls and then outward through the cored holes in the intermediate ring. These changes in direction cause the coarse particles of coal to be returned to the lower grinding balls. A similar action occurs as the coal stream again changes its direction and sweeps upward to the top of the mill. An adjustable sleeve installed at the discharge opening of the mill prevents the coal stream from short circuting passage through the classifying cone.

As the pulverized coal reaches the top of the mill coarse particles, carried upward with the fines, are rejected from the coal stream by either the force of gravity or action of the classifier. The coarse particles return to both rows of grinding balls for further pulverizing.

As no limitations are placed on the allowable temperature of incoming air due to lubricated bearings or similar mechanical construction, the temperature of the air can be adapted to suit the surface moisture content of the coal to be pulverized. Thus coal having a maximum surface moisture content of 12 per cent can be pulverized in a Type B pulverizer without the coal compacting or snow-balling in the furnace, provided the mill is supplied with a sufficient amount of preheated air.

The principle of air separation used is such that fineness is controlled by regulating the air flow and varying the position of the adjustable sleeve inside the classifying cone. While tests have shown that it is not uncommon for 80 per cent of the coal pulverized in a Type B Mill to pass through a 200 mesh screen and 90 per cent to pass through a 100 mesh screen, the mills are generally adjusted to obtain a fineness of 65-70 per cent through a 200 mesh screen and not over 2 per cent which will not pass through a 50 mesh screen. This latter degree of fineness meets satisfactorily the requirements of efficient combustion. The total volume of air used to effect separation is relatively small and varies from 25 cu. ft. to 30 cu. ft. per lb. of coal. The air is controlled independently of the secondary air.

The pulverizer is driven by a constant speed motor which consumes little power regardless of the mill's output. The mill has a wide operating range, full capacity to the minimum permitted by the burners. Changes in capacity are made by varying the rate of coal food and the mill responds quickly, but not too quickly, to such changes.

Type B pulverizers are built in capacities up to and including 40 tons of coal per hour. Its finish and workmanship are similar to that used on other high grade power plant equipment.

The TRADE MARK of STANDARD PURITY

IS YOUR ASSURANCE OF HIGH QUALITY

It eliminates the chances of costly errors which might result from variation in the purity of the chemicals you use. It helps you to standardize your processes, and to maintain the uniformity you seek in the products you make. It is a mark of "plus value."

General Chemical Company's principal products include:

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THE NICHOLS CHEMICAL CO., LTD., MONTREAL
LOS ANGELES
PHILADELPHIA
SAN FRANCISCO

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New York Trade Jottings

J. A. Kavanagh, of the American Paper and Pulp Association, is spending some time in Washington.

* * *

The weekly meeting of the Salesmen's Association of the Paper Industry was held on Monday at the Fraternities Club. Several interesting talks were given, relating to various problems in the paper industry.

* * *

A. J. Dubuc well known pulp and paper salesman who was formerly for many years with Perkins-Goodwin Company, of New York, has joined the Northwest Paper Company; New York office 52 Vanderbilt avenue. The mills of the company owned by the Weyerhaeuser interests, located at Cloquet and Brainerd, Minn., manufacture a variety of papers including book, offset, kraft and envelope specialties such as the well known Nortex and Arrow head grades. The patented process which gives these papers exceptional strength, folding qualities, cleanliness and adaptability for color printing effects, has made them widely popular among envelope manufacturers.

* * *

That lamp shade paper is in considerable demand, particularly types of unusual papers, is told by the Import Committee of the American Paper Industry in a recent report to subscribers. The question of classification of such papers has been a puzzling one to customs officials, because of the various types of paper intended for such uses. Much of this paper is hand made, but some importers are claiming such paper to be box board, dutiable at 10 percent, instead of 3 cents per pound and 15 percent as hand made paper, in accordance with the ruling of the customs officials. Some of the paper is plain, other types waxed, and one unusual type is a sheet from Japan made by dropping clots of vari-colored pulp on a hand made paper base.

* * *

A number of representative paper men met at luncheon Monday and organized the Paper Division of the Emergency Employment Drive that is to be started in New York City next week, as follows: Hugh J. Chisholm, of the Oxford Paper Company, chairman; R. H. Kellogg, of News Print Service Bureau, news print; C. R. MacMillan, of Union Bag and Paper Company, kraft; Fritz Lindenmyer, of Henry Lindenmyer, paper merchants; Fred A. Leahy, of Eastern Manufacturing Company, fine papers; Frank C. Overton, of Castle & Overton, rags and paper stock; Louis Calder, of Perkins-Godwin Company, pulp and mill agents; Sidney Ferguson, of George H. Mead Company, book and coated.

* * *

The importance of the Import Committee of the American Paper Industry to the paper industry is particularly shown by the many questions which have arisen since the passage of the new tariff act, involving classification of paper. When the act of 1922 went into effect there was no such organization for the customs officials to consult with, and consequently with no cooperation from the domestic industry some classification practices became current to the detriment of the domestic mills. With the Import Committee in existence, such a condition is averted with the going into effect of the new law. An important decision by the United States Customs Court involving an importation of colored paper at Boston gives the position of the Court as regards the difference between book and other papers, such as cover, in which the Court rules that the tariff act provision for printing papers is intended to include only papers of the type chiefly known as book. The court holds in specific terms that any paper which can be printed upon need not for that reason be considered printing paper under the terms of the tariff law. The case in question involved paper to be used as a base stock for printing, for eventual use as box covers, the printing to be in fancy designs. The case originated in 1928, and is a test case as regards the classification of certain papers of the cover paper type, and under this decision such papers are held dutiable as papers not specially provided for at 30 percent, and not as printing paper as claimed by the importer at ¼ cent per pound and 10 percent.

T. H. Casey 50 Years in Paper Trade

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 10, 1930.—On the occasion of his golden anniversary in the paper business, a number of friends of T. Harry Casey, president of the Casey-Bigley Company, 11 Otis street, met at the Exchange Club here the evening of November 4, with Mr. Casey as the guest of honor at a dinner, when he was presented with a gold pencil, appropriately inscribed.

John E. A. Hussey presided and paid a tribute to Mr. Casey, as did all of the others present. Col. Charles A. Proctor, of the Proctor Paper Company, made an address and read a poem complimentary to Mr. Casey. The gold pencil, presented by F. Bendel Tracy, in behalf of Mr. Casey's friends, was inscribed as follows:

"Presented to T. Harry Casey by friends November 4, 1930, Fifty Years in the Paper Trade."

Mr. Casey responded, expressing his appreciation of the honor.

Those present were T. Harry Casey, Hubert L. Carter, of Carter Rice & Co. Corporation; Arthur L. Hobson, of the St. Croix Paper Company; Col. Charles S. Proctor, of the Proctor Paper Company; F. Bendel Tracy, of the Fort Hill Paper Company; Charles A. Esty, of Carter Rice & Company Corporation; Jesse G. Swift, of W. H. Claflin & Co., Inc., M. O. Byrne, of Whitney Brothers, Inc., John E. A. Hussey, of the International Paper Company, and Norman Harrower, of Linton Brothers, Fitchburg, Mass.

Mr. Casey began in the paper business as an office boy with Col. E. A. Haskell, whose house carried on a wholesale and retail trade at 24 Federal street. In 1887, the office was moved to 11 Otis street, where it has been located for 43 years. In 1900, when Col. Haskell retired from active connection Mr. Casey took over the business and formed the firm of Casey, Bigley & Co. Mr. Casey is president and his two sons, T. Charles and Herbert J., are associated with him, the former being vice-president and treasurer.

Several friends came to Mr. Casey's office to congratulate him and the room was filled with flowers, sent by many in the trade.

Walter Richards Is Buried

ATLANTA, Ga., November 10, 1930.—Funeral services for Walter M. Richards, 57, junior partner of the S. P. Richards Paper Company, at 166-170 Central avenue, S. W., who died suddenly early Sunday morning, November 2, at his home in the Ponce de Leon Apartments, were held Tuesday morning at Spring Hill. Rev. E. M. Poteat officiated, and interment was in Oakland Cemetery.

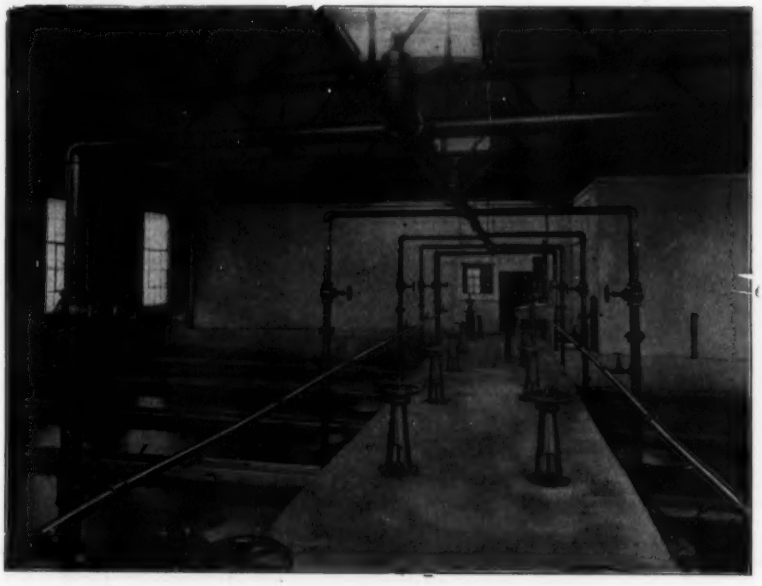
Mr. Richards, who was born and reared in Atlanta, was the son of the late S. P. Richards, who in 1848 founded the paper company which bears his name, and Mrs. Sara Valkenberg Richards. At his father's death, the business reverted to Walter Richards and his brother, Russell E. Richards, who is the senior member of the firm.

Alexander Thomson Builds Lodge

Alexander Thomson, vice-president and manager of sales of the Champion Coated Paper Company, Hamilton, Ohio writes:—

"I regret to note that in your issue of October 23, your Dayton correspondent has given you the wrong name as to the builder of 'Old Timbers,' the hunting lodge built by me on my estate near Holton, Indiana.

"Your interesting article is correct in every respect except that the lodge was built by me instead of by Peter G. Thomson."



PROTECTED

PROTECTED—protected by Norwood Filters from all the dirt and debris that will ruin good paper if the water supply is not adequately treated before being taken into the paper making processes. Norwood Filters keep out all impurities during high water or low. They make it possible for a mill to produce paper of uniformly high quality with fewer seconds. They keep costs down and production up.

The Norwood Engineering Company has been building filters for paper mills for nearly forty years. Let the Norwood engineers make a survey of the water conditions at your plant. Their recommendations will be based on wide study and long experience with the water supply problems of paper mills.

Which will you have—the Pressure Filter or the Gravity Filter Catalog? One or both are yours for the asking.

NORWOOD ENGINEERING CO.

17 No. Maple St., Florence, Mass.

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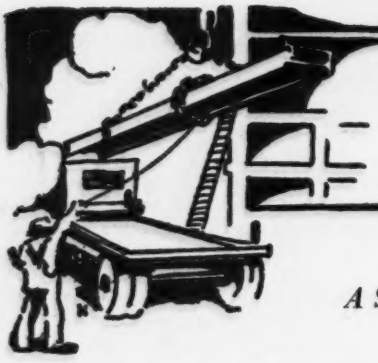
Filters . Calenders . Platers . Dusters . Rag Thrashers . Folding Machines . Suction Boxes



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Dallas, Tex.—The Dixie Wax Paper Company, Inc., 1300 South Polk street, is reported to be planning an expansion program at its processed paper plant, following recent increase in capital from $275,000 to $435,000. Output will be increased.

Philadelphia, Pa.—The Empire Paper Box Company, Eighth and Green streets, has arranged for the lease of space in the Oxford Mill, Front and Oxford streets, heretofore given over to textile service. The floor area approximates 16,000 square feet, and will be used by the Empire company as new plant unit for manufacture of folding paper boxes, cartons, etc.

Cincinnati, Ohio.—The Chatfield & Woods Company, 227 West Third street, paper products, affiliated with the Chatfield Paper Corporation, same address, is said to be arranging for early superstructure for proposed new plant on Arbor Avenue, Norwood district, recently referred to in these columns. The unit will be one-story, and is reported to cost more than $60,000, including two-story office unit adjoining. It is understood that present establishment will be removed to new location and increased output arranged. John Henri Deekin, 15 East Eight Street, Cincinnati, is architect.

Connellsville, Pa.—The Fort Wayne Corrugated Paper Company, Fort Wayne, Ind., is running on a capacity production schedule at its recently established plant at Connellsville, near the mill of the Capstan Glass Company, which is using practically the entire output. The company is arranging for immediate increase in working quota and will place the plant on a double shift basis.

Ontonagon, Mich.—The Ontonagon Fibre Company is arranging to secure its power supply from the new steam-operated electric power plant which is now being constructed in this district by the Cooper Range Mining Company, Calumet, Mich., and the Insull interests, 72 West Adams street, Chicago, Ill. It is understood that the Ontonagon company has entered into long-term contract for power supply, beginning early next year when the new generation station is scheduled for completion. The project is reported to cost more than $2,500,000 with transmission lines and power substations.

Holyoke, Mass.—The American Writing Paper Company is said to be arranging for the immediate reopening of the local mill of its George C. Gill Paper Company Division, in connection with the establishment of the bulk of operation at Holyoke plants. The Gill mill will give employment to a working force of about 140 operatives, and will be placed on a full production schedule at an early date.

Atlanta, Ga.—Fire recently damaged a portion of the plant of the American Paper Stock Company, 230 Grant street, S. E. An official estimate of loss has not been announced. The damage will be replaced.

Hoboken, N. J.—The Gatti Paper Stock Corporation, Thirteenth and Monroe streets, is arranging for the early erection of a new addition to its local plant, for which bids on general contract recently were received, and will use the unit for increased capacity. It will be two-story, 90 x 192, feet, and is estimated to cost over $50,000, with equipment. C. F. Dieffenbach, 84 Washington Street, Hoboken, is architect, in charge.

Westfield, Mass.—Lockwood Envelope Specialties, Inc., Westfield, recently organized with a capital of 1000 shares of stock, no par value, is said to be planning the operation of a local factory for the manufacture of envelopes and kindred paper goods, Ray L. Lockwood, 81 Craiwell avenue, West Springfield, Mass., is president and treasurer.

Miamisburg, Ohio.—Miamisburg Paper Company, Miamisburg, has approved plans for alterations and improvements in its plant, awarding a general contract to I. F. Weber, Commercil Building, Dayton, Ohio. Additional plant facilities will be provided, including space for storage and distributing service. The program is reported to cost close to $20,000.

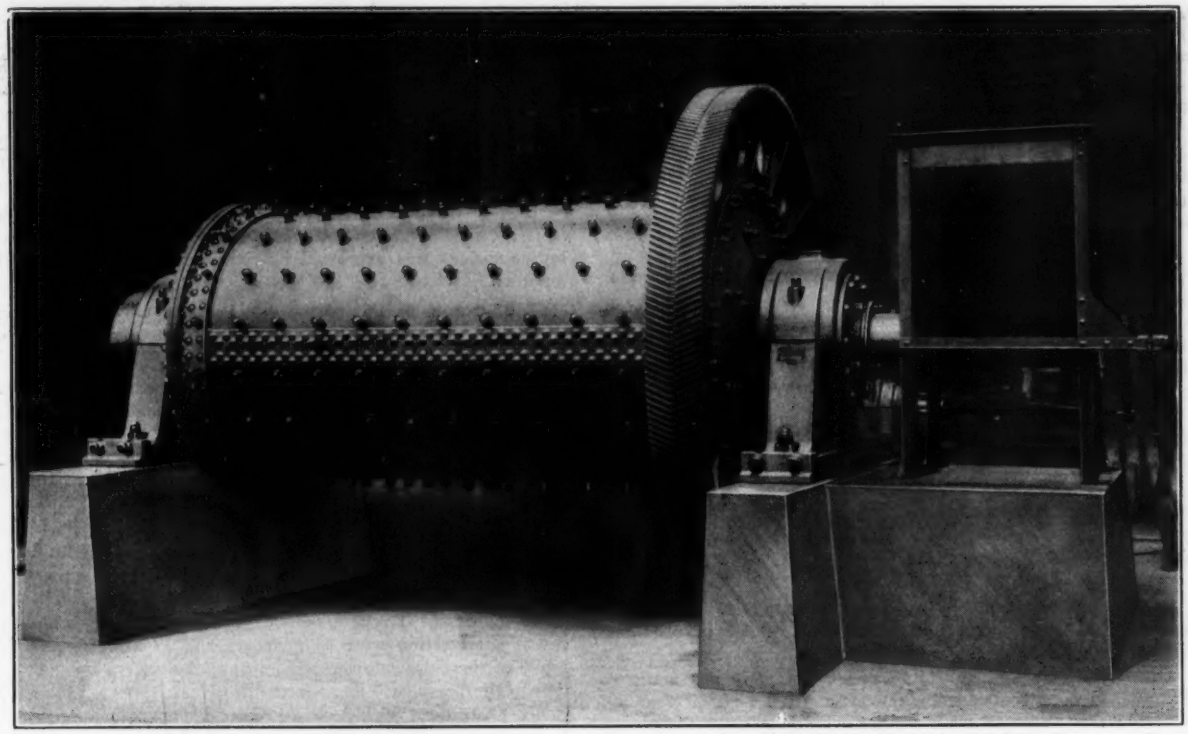
Chicago, Ill.—The Vortex Manufacturing Company, 421 North Western avenue, manufacturer of paper cups and containers, is pushing work on its expansion and improvement program, including the construction of a new addition to provide about 65,000 square feet of additional floor space. The new unit is scheduled to be ready for service early in January. The Company is also remodeling and improving its existing plant for increased production efficiency. The entire program has been arranged to house the manufacturing division in the new factory building, utilizing present structure for storage and distributing service both for raw material and finished products. The work is estimated to cost about $400,000, with equipment.

Chicago, Ill.—The Continental-Diamond Fibre Company, Chicago, has leased its three-story and basement building at 1652-58 Besley Court, to the Vogler-Schillo Company, 1680 Elston Avenue, which will use the structure for a different line of production. It is understood that the Continental-Diamond company will continue operations at another locality in this section. Main plants are at East Newark, Del., and Bridgeport, Pa.

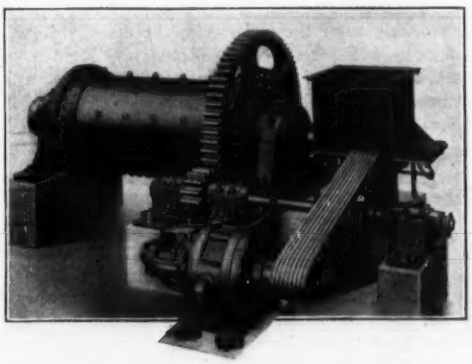
Cincinnati, Ohio.—The Jackson Box Company, 4927 Beech avenue, Norwood, manufacturer of corrugated paper boxes and containers, has work in progress on its new one-story and basement plant unit, for which general contract recently was let to the Austin Company, Dixie Terminal Building. The expansion is reported to cost about $70,000, with equipment.

Newfane, N. Y.—The Lockport Felt Company, manufacturer of paper-makers' felt, has approved plans for a new addition to its plant for considerable increase in present output, consisting of a one-story unit, 80 x 160 feet, reported to cost close to $100,000, including machinery. Work has been placed under way. Structure will be pushed to completion. General contract has been let to the W. B. Eaton Company, Lockport, N. Y.

Midland, Ont.—International Fibreboard, Ltd., Montreal,



Rod Mills Reduce Costs ◆ ◆ Improve Paper



A-C Products for the Paper Mill

Rod Mills—Electric Motors
Centrifugal Pumps—Texrope Drives
Power Transmission Machinery
Perforated Metals—Thorne Barkers
Power Plant Equipment:
Steam and Hydraulic Turbines
Generators — Condensers

Allis-Chalmers Rod Mills require less power to operate than beaters and the continuous operation of a rod mill results in increased capacity.

Allis-Chalmers Rod Mills have many advantages in preparing pulp stock, tending to give hydration to the stock without excessive shortening of the fibre. Rod Mills can be applied to a coarse grade of pulp and still produce a clean paper.

Allis-Chalmers builds rod mills in standard sizes of 3′x 6′; 4′x 8′; 5′x 10′; and 6′x 12′. Write for data on rod mill operation.

ALLIS-CHALMERS

Allis-Chalmers Manufacturing Company, Milwaukee

Que., operated by the Canadian International Paper Company, is said to be running on capacity schedule at its local mill for the manufacture of insulating building board. The company is carrying out an expansion program in its sales division, and has recently opened a branch office at Toronto, Ont.

Sault Ste. Marie, Ont.—The Abitibi Power & Paper Company, Ltd., Toronto, Ont., has closed down its mills at Sault Ste. Marie, for a temporary period, owing to large stock of newsprint on hand, it is said. The company plans to resume production at the plant before or around December 1.

New Companies, Etc.

New York, N. Y.—The Interstate Mill Supply Company, has been incorporated with a capital of $10,000 and 10 shares of stock, no par value, to manufacture and deal in paper products. The incorporators are Seymour W. Finkelstein and Isaac C. Donner, 632 Faile street, Bronx, N. Y. The company is represented by Irving Kay, 345 Fifth avenue, attorney.

Brooklyn, N. Y.—The S & S Corrugated Paper Machinery Company, 16 North Fourth street, has filed notice of increase in capital from $60,000 to $200,000, for general expansion.

New York, N. Y.—The International Kapok Company, has been incorporated with a capital of 200 shares of stock, no par value, to manufacture and deal in fibre products. H. B. Olsen, 145 West Thirty-Eight street, is one of the incorporators and representative.

Albany, N. Y.—The Bryant Paper Company, Kalamazoo, Mich., a Michigan incorporation, has filed notice of organization to operate in New York with a capital $12,500.

Otsego, Mich.—Mac Sim Bar Paper Company has arranged for a change in company capitalization from $2,400,000 to 80,000 shares of stock, no par value and $1,600,000.

International Earnings Grow

For the third quarter this year International Paper and Power Company reports net income available for dividends on its preferred stock of $974,873.91. Comparative figures follow:

	Third Quarter		First Nine Months	
	1930	1929	1930	1929
Net rev., inc. other inc.	$9,725,208	$9,919,714	$30,472,698	$23,814,268
Less:				
Depreciation	1,837,229	2,530,827	6,830,456	6,753,984
Int. and disc. on funded debt, income taxes and minority int. in subs.	4,742,132	4,497,165	15,051,952	10,810,996
Balance for dividends	$3,145,847	$2,891,722	$8,590,290	$6,249,288
Divs. on stocks of subsidiaries	2,170,973	1,869,119	6,344,305	3,818,620
Balance for I. P. & P. Co. dividends	$974,874	$1,022,603	$2,245,985	$2,430,668
Dividends on I. P. & P. Co. stock:				
Preferred stock	$1,625,878	$1,613,254	$4,874,247	$4,829,871
Class A common stock	.....	597,254	1,197,347	1,788,255
Total dividends	$1,625,878	$2,210,508	$6,071,594	$6,618,126

The 1929 figures do not include the undistributed portion of the earnings for the first quarter on the common shares of New England Power Association then held by International Paper Company, the earnings and charges of New England Power Association not having been consolidated until April 1, 1929.

In his comments to shareholders, Archibald R. Graustein, President of the Company, says:

"The expected growth in earnings from the Company's Canadian power properties and from the increasing efficiency of its paper mills is being realized, but to date its effect has been offset by the lower volume of sales and the lower prices prevailing in the pulp and paper business. In view of these facts the Directors decided that under current business conditions the omission of the common dividend was conservative and in the best interests of all the stockholders.

"September earnings were larger than those of July or August due in part to reduction of administration expenses. On October first, large addition contract deliveries of power were commenced, and preliminary figures indicate that October earnings will exceed the dividend accrual on the preferred during the month."

Southwestern Paper Men Hold Conference

[FROM OUR REGULAR CORRESPONDENT]

SAN ANTONIO, Tex., November 10, 1930.—Optimism was the keynote of the semi-annual conference of the Southwestern Paper Merchants Association held in San Antonio, Texas, Thursday, October 23, according to Louis E. Sein of the Shiner-Sein Paper Company, San Antonio, who, as president of the association, presided at the meeting.

"Despite the general business depression, the paper industry is in fairly good condition," Mr. Sein said. "Satisfaction with existing conditions was expressed by members from all parts of this territory."

C. E. Schoff of the San Antonio Paper Company made the address of welcome, and J. E. Crain of Houston, who is connected with the Continental Paper and Bag Mills, responded.

Sherman Perry of the Crystal Tissue Company of Middletown, Ohio, spoke on the subject, "Cementing Friendship with the Business Letter." Following an address by J. T. Allen of Dallas on "Uniform Cost Accounting and Its Practical Operation," the association adopted the uniform cost accounting system as adopted by the National Paper Trades Association.

Reports of officers included that of Lawrence Pollock, National delegate, who recently attended the National convention in Chicago.

The Southwestern Paper Merchants Association is composed of paper jobbers of Texas, Oklahoma and part of Louisiana. Present at the meeting were 20 members and 39 associate members. Many of the delegates were accompanied by their wives. In addition to the president other officers are L. H. Estes of the Empire Paper Company, Wichita Falls, Tex., vice-president, and A. N. Jochen of the Tulsa Paper Company, Tulsa, Okla., secretary-treasurer. The spring meeting of the association will be held in Houston, Tex. Although no definite date has been set, the meeting will probably be sometime in March, according to Mr. Sein.

On the afternoon of the convention day, while members of the association were in closed conference, their wives, the associate members and wives were given a sightseeing trip around the city.

On the morning after the conference the entire delegation left San Antonio by bus for a trip to Monterrey, Mexico. Among other features planned for their entertainment was a banquet given by the Monterrey Chamber of Commerce. The visitors returned from Mexico by way of San Antonio Sunday and left for their homes that night.

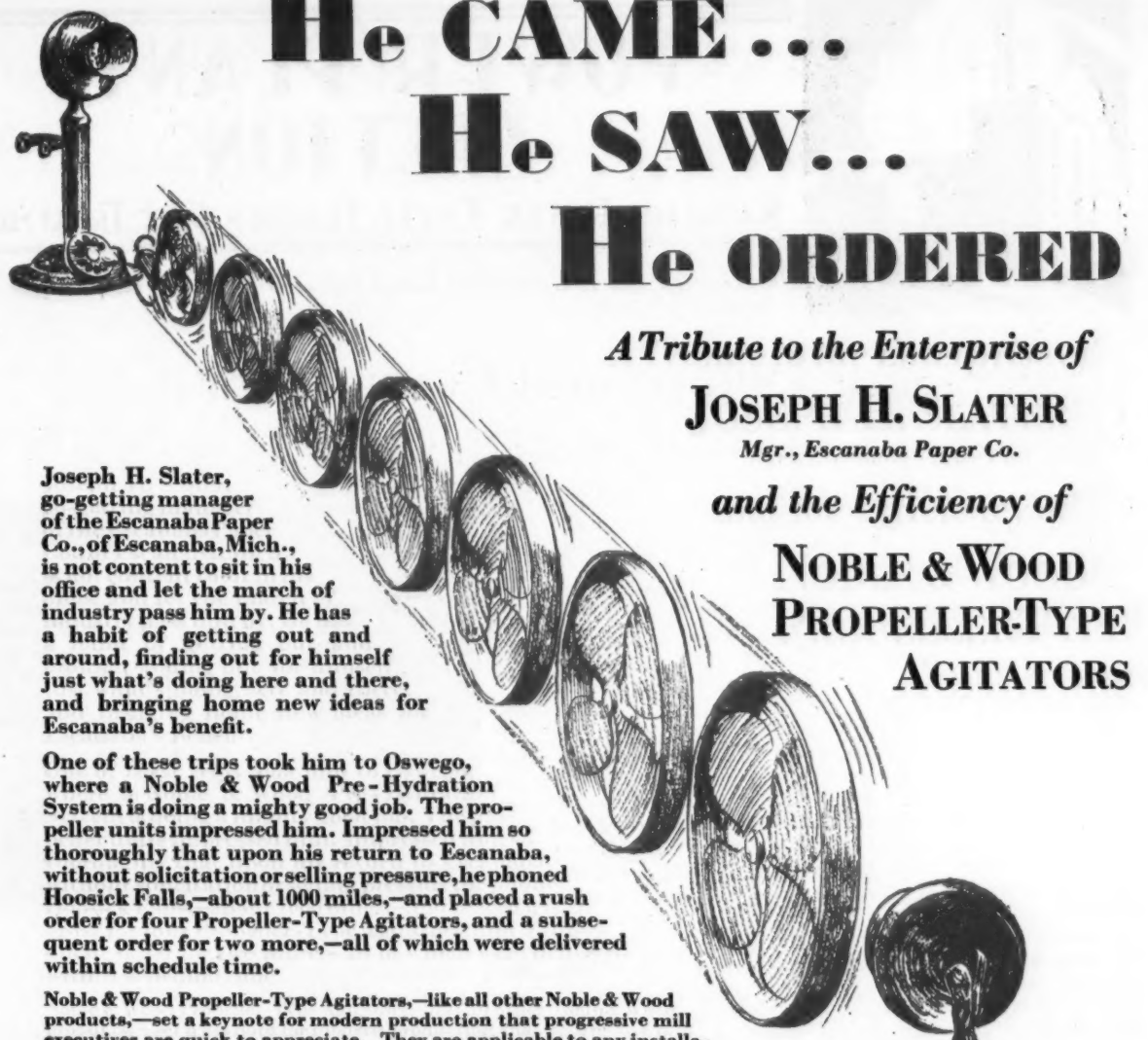
Forest Preserves To Be Discussed at Utica

[FROM OUR REGULAR CORRESPONDENT]

UTICA, N. Y., November 10, 1930—Continuance of discussion regarding the administration of the forest preserve in New York State begun at Lake Placid last summer is scheduled to take place on November 18 in the Hotel Utica. The meeting has been called by the New York State Economic Council mainly because of a request made by state officials in September. The coming session will bring to this city a number of the principal industrial leaders in Northern New York, especially those taking an active interest in lumbering, recreational and utility developments. The aim of the group is to outline a forest preserve policy calling for full development, protection and utilization.

At the last session held in this city late in October many leaders in the reforestation movement attended. Among those delivering addresses were Dr. Richmond Sykes, president of St. Lawrence University, and Prof. Floyd M. Callward, head of the forestry department. At that meeting plans for reforestation and conservation projects were discussed together with various means of promoting co-operation between the state and individuals or private concerns in which the university plans to take an active part. Adequate reforestation through reformation of the forest taxation laws, state appropriations on a scale similar to other public improvements and the encouraging co-operation of the Conservation Department were among the subjects under discussion.

He CAME...
He SAW...
He ORDERED



A Tribute to the Enterprise of

JOSEPH H. SLATER

Mgr., Escanaba Paper Co.

and the Efficiency of

NOBLE & WOOD PROPELLER-TYPE AGITATORS

Joseph H. Slater, go-getting manager of the Escanaba Paper Co., of Escanaba, Mich., is not content to sit in his office and let the march of industry pass him by. He has a habit of getting out and around, finding out for himself just what's doing here and there, and bringing home new ideas for Escanaba's benefit.

One of these trips took him to Oswego, where a Noble & Wood Pre-Hydration System is doing a mighty good job. The propeller units impressed him. Impressed him so thoroughly that upon his return to Escanaba, without solicitation or selling pressure, he phoned Hoosick Falls,—about 1000 miles,—and placed a rush order for four Propeller-Type Agitators, and a subsequent order for two more,—all of which were delivered within schedule time.

Noble & Wood Propeller-Type Agitators,—like all other Noble & Wood products,—set a keynote for modern production that progressive mill executives are quick to appreciate. They are applicable to any installation where stock must be kept in motion,—in pre-hydrating vats, in stock chests, in beaters. They set up positive circulation that prevents the formation of dead pockets or sluggish sectors; speed up hydration; reduce the beating cycle; and effect rapid and thorough mixing of fillers, size and color. They permit the handling of high density stocks in volume without complication.

Somewhere in YOUR mill there is a place where production can be stepped up by Noble & Wood Propellers. We'll be glad to point out where—without obligation. Follow Mr. Slater's example—phone, wire or write for action.

NOBLE & WOOD

MACHINE COMPANY

Hoosick Falls New York

PACIFIC COAST BRANCH: 355 Everett Street, Portland, Ore.

POWER PLANT SECTION

REDUCING POWER COSTS THROUGH UNIT TREATMENT

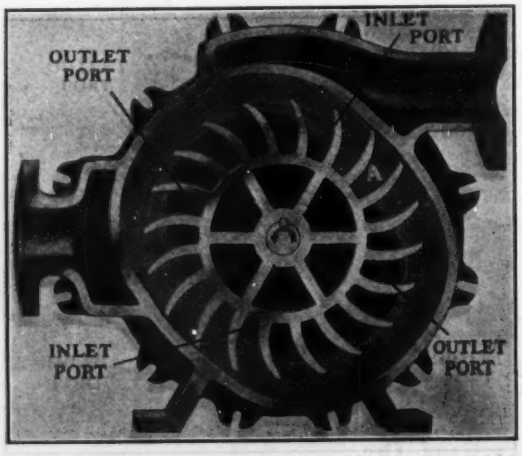
Conducted by **Reginald Trautschold Consulting Engineer**

Air Pumps and Compressors

Handling Air in Paper Making

The handling of air in present day paper making activities is a far greater undertaking, in respect to volume handled, than even the pumping of the large quantities or water and other essential liquids employed. Where a gallon of liquid is used, for example, the volume of air which has to be handled is probably seven or eight times as great. This means that in a modern 100-ton mill if the handling of as much as 200,000,000 cubic feet of air a day may be entailed, or, perhaps, about fifty times as much air as passes through the boiler furnaces of the mill's power plant.

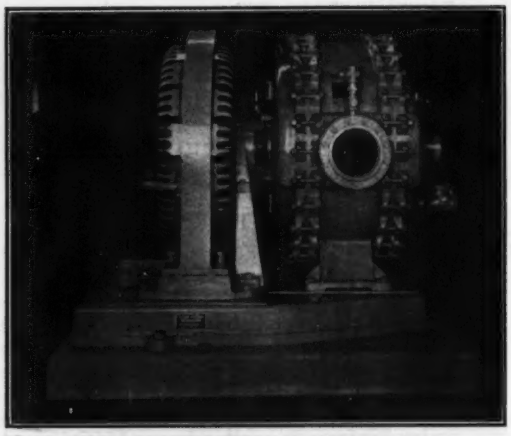
The handling of this very large quantity of air, roughly 1,000 cubic feet of air for every pound of paper produced, is made necessary chiefly in creating and maintaining the required vacuum on the flat boxes on the wires and felts of Fourdrinier and sulphate drying machines, on the felts of cylinder machines, and on the suction and couch rolls. Large quatities of air have also to be handled in connection with the operation of the dryers. In these various processes, the air absorbs a good deal of valuable heat, creating another problem in the economical operation of the mill, for, not only is the handling of some 200,000,000 cubic feet of free air entailed every twenty-four hours in the average high-speed, 110-ton mill, but this same air absorbs something between 500,000,000 and 600,000,000 Btu. of costly and valuable heat daily. This



Courtesy: Nash Engineering Co.

FIG. 1

Cut showing principle of operation of rotary hydro-turbine air compressors and vacuum pumps



Courtesy: Nash Engineering Co.

FIG. 2

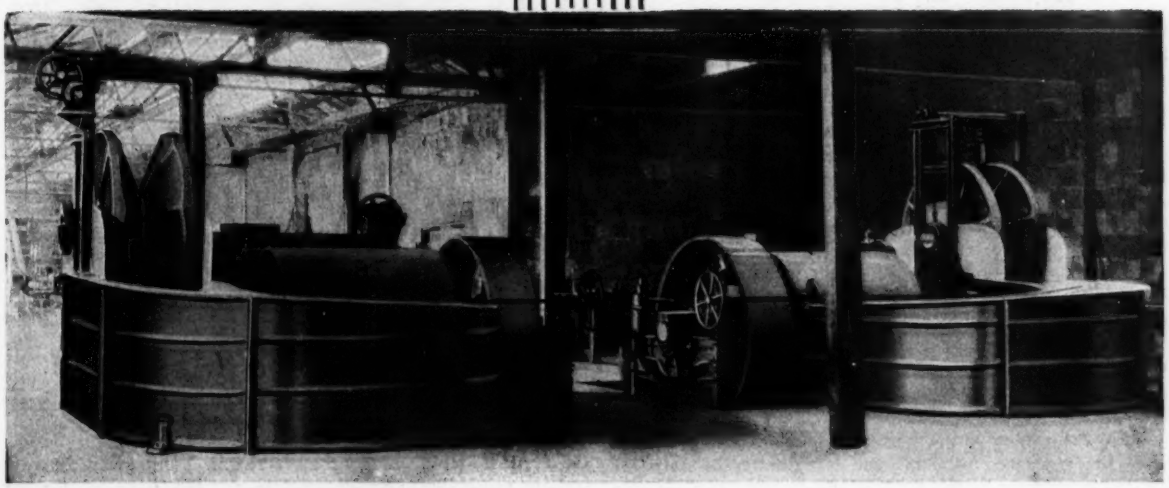
Motor driven, rotary vacuum pump in which the rotor shaft of the motor is keyed to the shaft of the pump

is about equivalent to the amount of usable heat liberated in the combustion of 17 or 18 tons of coal of average quality and it imposes a heavy burden on modern paper making.

A large volume of water, much of it containing valuable pulp and chemicals, has to be handled with the air, of course, and the necessity of salvaging the white water, fine pulp, chemicals, etc., together with the heat in the water, is quite generally appreciated. In fact, almost every mill looks upon such conservation of materials and of heat as essential. When it comes to making any profitable use of a constant and very large supply of free air and of the considerable amount of heat it withdraws in paper making processes, however, the possibilities of effecting substantial economies in operating costs are still quite apt to be overlooked.

The situation as it exists today is well shown by reports recently made by two prominent builders of equipment used extensively in paper mills. One of these specializes in pumps and has supplied paper mills with such units ever since there has been a paper making industry on this continent. This concern states: "While during past years we have sold to paper mills a great many of the large heavy type of vacuum pumps, the use of these has practically died out. We still supply a good many pumps for the handling of stuff, white water and many other pumping services, but do nothing at all in the compressor or vacuum pump line." This is pretty conclusive

Commercial EFFICIENCY VS. Mechanical EFFICIENCY



A BEATER may run for a score of years and still be mechanically efficient.

Yet this same beater may be pitifully INefficient commercially. It may be operating at a tremendously greater cost per unit of output than some other beater on the market.

The big difference between mechanical efficiency and commercial efficiency is a matter of common, everyday PROFIT—a point many manufacturers fail to see. Or, if they do, fail to realize its true significance.

Any machine which is earning less than another for doing the same work is commercially inefficient. And all commercially inefficient machinery is obsolete.

Don't make this mistake with your beaters. Check up. Get your costs. Compare your beating time, amount of stock, circulation, horsepower, hydration and maintenance with the results obtained by Niagara Beaters built by Valley.

Valley beater facts can be furnished you. Our intimate contact with hundreds of different beating problems during the past decades, equips us with a wealth of information which may help you to put your beating operations on a more profitable basis. Write the Valley Iron Works Co., Appleton, Wisconsin.

VALLEY

Equipment for Paper and Pulp Mills

New York Office: 350 Madison Ave.
Western Mfg. & Sales Div.: Smith & Valley Iron Works Co., Portland, Ore.
Canadian Representatives: Pulp & Paper Mill Accessories, Ltd., Montreal, Canada

evidence that there have been marked changes in regard to handling air and water from the wires or felts.

The other manufacturer is also well known to paper mills and has for years supplied pumps, turbines, speed reducers and other essential mill equipment. This builder also manufactures centrifugal air compressors of fairly large capacity and advises that paper mills require compressed air only in comparatively small quantities. This is evidence that little has yet been done in respect to using the large quantity of free air made available in paper making processes, since its considerable volume, 200,000,000 cubic feet for a 100-ton mill, would necessitate the use of compressors of quite respectable capacity in order to handle any such quantity daily.

Handling the Air from Flat Boxes.

In the past, the general practice in handling the air and water withdrawn from the wires or felts, was to use a suction, or vacuum, pump by which the air and water were drawn in from the flat boxes and discharged together. Large quantities of water and larger quantities, in volume, of air had to be handled, with the result that the water handling capacity of the pump was very seriously handicapped by the presence of the air and its capacity for air was greatly decreased by the water, with the further result that power requirements were abnormal. The chief difficulty was in handling the large quantity of air essential for maintaining a suitable vacuum, or degree of suction.

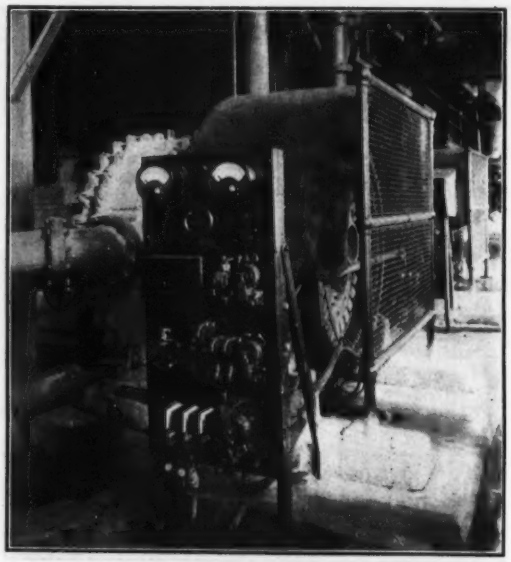
Some idea of the difficulties encountered may be gained when it is appreciated that the displacement of a standard, heavy-duty 12-inch x 12-inch, triplex, double acting, piston pump of the low-speed vacuum type is a matter of only 187 cubic feet per minute, or about 11,000 cubic feet per hour. In a 100-ton mill, the volume of free air to be handled per hour may be more than 8,000,000 cubic feet. Handling water alone, such a pump would have an hourly displacement capacity at the same speed of some 84,000 gallons.

It is very evident from such situations, quite common to the modern paper mill, that radical changes in the practices of handling the air and water from the wires or felts have become necessary. To handle the large volume of air economically and expeditiously, the air has to be separated from the water, obviously, and handled by some variety of air compressor. Also, the large quantity of water, freed from air, necessitates the use of pumping equipment of large capacity, quite logically some kind of centrifugal pump.

Air Compressor Equipment

The separation of the mixture of air and water coming from the flat box headers entails the employment of a settling, or separation, tank, of course, but this preliminary operation serves primarily to make feasible a dissociation of the tasks of air and water handling. For this reason, the essential air compressing equipment, compressor or vacuum pump, is in effect the unit of first and chief concern in describing a modern system of flat box pumps.

A very suitable air compressor for service of this kind is the rotary type (vacuum pump) referred to briefly in these columns in the discussion of pump installations on May 1, 1930. These pumps will handle large volumes of water with the air, making the equipment particularly suitable for so-called wet vacuum pump service. The principle upon which they operate is very distinctive, a rotor consisting of a circular hub with projecting blades revolves in an elliptical casing partially filled with water or other liquid. The blades of the rotor carry the water around and the centrifugal force developed causes the water to follow an elliptical path conforming to the contour of the casing, thus alternately causing



Courtesy: General Electric Co.

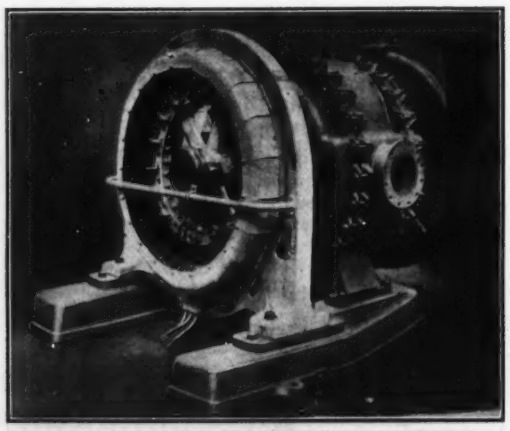
FIG. 5

Rotary vacuum pump, driven by 104 hp. synchronous motor, serving couch roll suction box and maintaining a 21-inch vacuum on paper machine at prominent Canadian mill

Courtesy: Nash Engineering Co.

FIG. 3

Vacuum pumps connected to suction couch and suction press of large news print machine in prominent Canadian mill handle 25,000,000 cubic feet of free air daily at 20-inch vacuum



Courtesy: Nash Engineering Co.

FIG. 4

Rotary flat box unit in which the rotors of the motor and vacuum pump and the impeller of the water pump are carried on a common shaft

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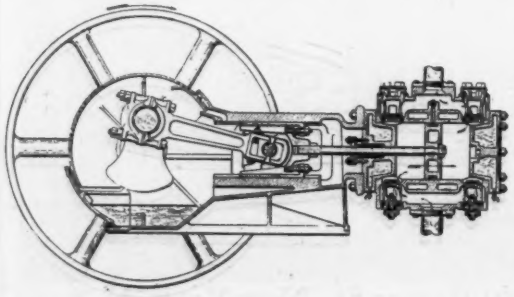
the water to fill and empty the rotor chambers between the successive rotor blades, as the elliptical casing walls converge and diverge. The proportions of the casings are such that as the centrifugal force throws the liquid out against the casing walls at the long diameter ends, emptying the rotor chambers, inlet ports connecting with the pump inlet are unsealed and air is drawn in to replace the rejected water. Similarly, as the elliptical converging casing walls force the water back into the rotor chambers, the entrapped air is first compressed and then exhausted through outlet ports connecting with the pump outlet. This cycle of operations occurs twice during each revolution of the rotor and, as air is drawn into several of the rotor chamber spaces simultaneously, i. e., before a space is completely filled, another commences to take in air, a steady flow of air through the pump outlet, free from pulsation, is maintained.

The only moving part is the rotor and, as the compression of the air takes place simultaneously on opposite sides of the rotor and the outlet ports are located also on opposite sides of the casing in the alternate quadrants, the rotor is maintained in balance both endwise and sidewise against strains due to the compression created. This simplicity of constructon insures marked reliability and durability and as the air is in intimate contact with the water during its passage through the pump, compression follows closely the isothermal curve and a high working efficiency is developed, particularly for air delivery against pressures of from 8 to 12 pounds per square inch. Against pressures of from 3 to 15 pounds, the efficiency of the units is good and they may be operated continuously and economically against any pressure up to 20 pounds. The air is thoroughly washed during compression and is delivered free from oil or like impurities.

The units are correspondingly efficient as vacuum pumps, operating best at vacuums of from 12-inch to 18-inch of mercury, between which limits the efficiency developed in service is practically constant. For lower or higher degrees of vacuum, the efficiency falls off somewhat, but despite this the units can be operated to advantage on vacuums of from 6-inch to better than 20-inch of mercury. The maximum vacuum obtainable appears to vary from about 21-inch of mercury for the smallest units to 23-inch for the larger sizes.

Combining Air and Water Handling

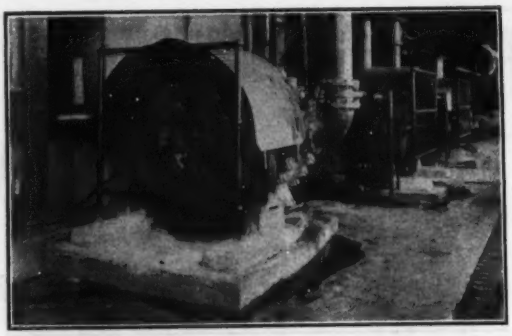
By combining such rotary air compressor, or vacuum pump, with a suitable centrifugal pump, it has been feasible to segregate the operations of handling air and water from the flat boxes, preliminary dissociation of the air and water taking place in a separation tank to which the flat box headers discharge. The air compressor, or vacuum pump, section handles only the air which collects in the upper portion of the separation tank, while the centrifugal pump section handles the white water brought over from the flat boxes. The air reclaimed from flat box discharge is usually allowed to escape,



Courtesy: Sullivan Machinery Co.

FIG. 6

Sectional view of modern single-stage air compressor



Courtesy: General Electric Co.

FIG. 7

Rotary vacuum pumps, driven by 104 hp. synchronous motors, serving (from left to right) flat boxes, couch suction and press suction of paper machine in Canadian mill

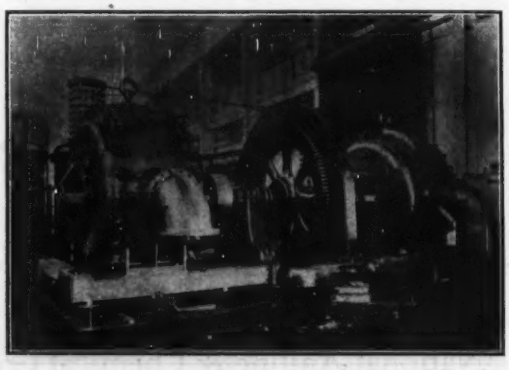
being rejected against atmospheric pressure, while the centrifugal pump discharges the white water against the necessary head to the beaters or stock chest, or direct to a well under the paper machine.

In the modern combination unit, both the air rotor of the vacuum pump and the water impeller of the centrifugal pump are mounted on the same shaft and operate together, in effect combining in a single casing a turbine air pump designed for air and a centrifugal pump designed for water. Each element of the combination, that for air and that for water, is very much smaller than a single pump designed for handling both the air and the water at the same time and the working efficiency of the combination unit is very much higher than can be secured with a single pump handling the mixed discharge of the flat boxes. In installing such equipment, incidentally, it is simply necessary to bring the header from the flat boxes back to the connection provided on the receiving, or separating, tank and to pipe separately the air discharge to atmosphere and the water discharge to the desired location.

The efficiency of the vacuum pump unit in handling the air withdrawn from a large news print machine may be judged in some measure by the results secured in the installation illustrated of two rotary, vacuum pump units driven by a common motor at a prominent Canadian news print mill. One of these units is connected to the suction couch and the other to the suction press of a large Fourdrinier, each unit handling approximately 4,000 cubic feet of air a minute at 20-inch vacuum, or together close to 25,000,000 cubic feet of free air daily from the suction couch and the suction press alone.

Dryer Exhaust Unit

Very much the same combination of equipment, in somewhat



Courtesy: General Electric Co.

FIG. 8

450 hp. synchronous motor driving two large rotary vacuum pumps

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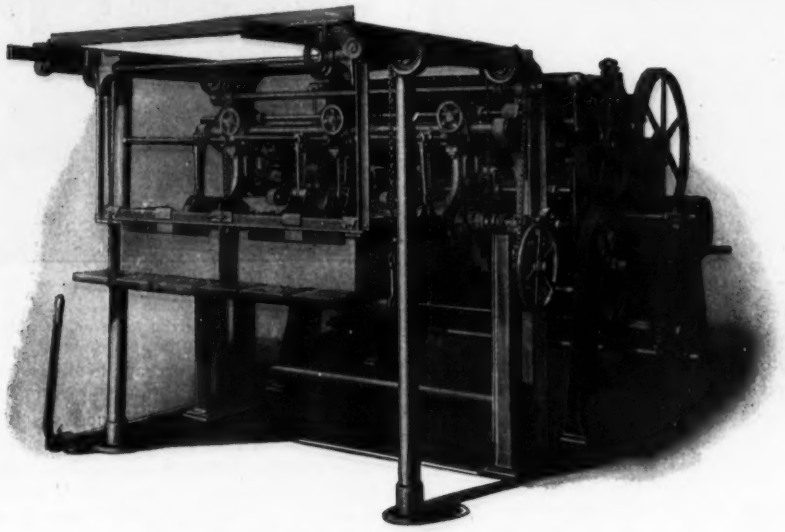

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SHEETS can be piled up to 36 inches high by using M & W Lay Boys. The top of the pile has a constant height, the table being automatically lowered as sheets are added to the pile. At 36 inches height of pile the table has come down to the proper level to be taken off on a hand truck.

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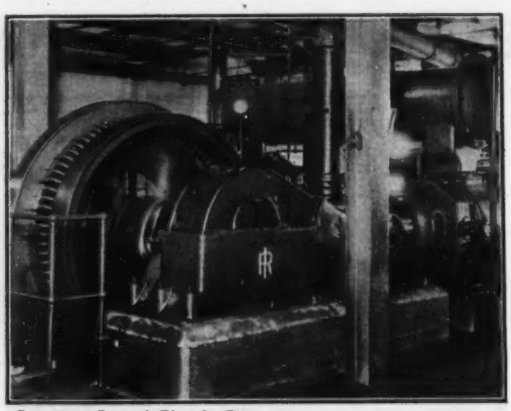
modified form, also serves admirably as a dryer exhaust unit. In the latest form, such a unit consists of a turbine vacuum pump, centrifugal feed pump and air separator assemblage mounted on a single base and direct connected to an electric motor, the pump elements being connected by integral manifolds and so eliminating a multiplicity of piping.

The returns from the dryers first pass through a self-cleaning strainer and into the receiving tank, a suction of 10-inch vacuum being maintained by the pumps, from which the condensate passes to the centrifugal water impeller. This pump element, which simply handles the water of condensation, forces the hot water back to the boiler, feed water heater or other equipment, while the air and vapors drawn in with the condensate are handled by the vacuum pump element. The volatiles are exhausted from the top of the receiving tank by the air rotor and pass into an air separator, any water passing over with the air being trapped in the separator and returned to the system. Incidentially, the air handled constitutes about four-fifths of the total handling, providing another quite respectable supply of thoroughly washed air, commonly thrown away.

The system is made automatic in operation by the inclusion of a ball float in the receiving tank which governs the operation of the actuating motor. The float rises as the receiving tank fills with condensate, closing a switch and starting the pump motor, and as the tank is emptied by the water pump and the float falls, the switch opens and stops the motor. A vacuum regulator switch also plays a part in the automatic control of the system. Such switch opens when sufficient vacuum on the system has been created and stops the motor, provided sufficient condensate has also been removed from the receiving tank, and when the vacuum drops below the required value the vacuum regulator switch recloses and again starts the motor and pumps.

Most progressive mills are quite familiar with these modern applications of rotary type air compressors and vacuum pumps to the handling of air in paper making, of course, and the sketchy description of the equipment and operations has been presented first, as a record and depiction of changes in flat box pumping and other vacuum pump services in mill activities and, second, to focus attention upon the fact that the necessary handling of air in modern paper making furnishes an abundant supply of thoroughly washed air, together with a very considerable amount of valuable heat. It is not the intention to advance suggestions as to the many and diverse uses to which such an air supply can be put to profitable use in a progressive paper mill, both because the opportunities



Courtesy: General Electric Co.

FIG. 11

Air compressor service for a prominent eastern paper mill

afforded for so doing are apt to differ widely among mills and because the discussions in these columns aim to be records of actual achievements and not simply recommendations or suggestions. It will be of interest, however, to draw attention to an example or two of compressed air applications in a mill, without consideration of the source of the air supply, whether atmospheric or made available from paper making processes entailing the handling of air, the latter available thoroughly washed and obtainable under moderate pressure.

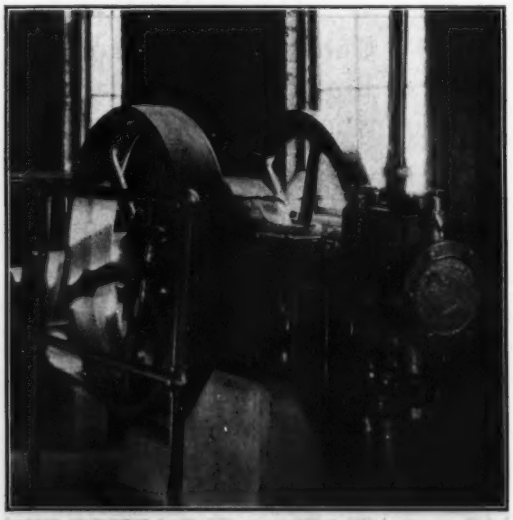
Using 200,000 Cubic Feet of Compressed Air Daily

At the plant of the Claremont Paper Company, Claremont, N. H., for instance, an 8-inch x 6-inch, single-stage air compressor of the standard reciprocating variety is in continuous operation throughout the year, furnishing a supply of compressed air for what may well be termed incidental operations. Air is ordinarily supplied at the quite moderate pressure of 35 pounds per square inch and is used to blow the cuttings from the trimmers and for light general cleaning of motors and other machinery. Air at a pressure of 100 pounds, supplied by the same compressor run at a higher speed, is also used for the operation of miscellaneous pneumatic tools about

Courtesy: Sullivan Machinery Co.

FIG. 9

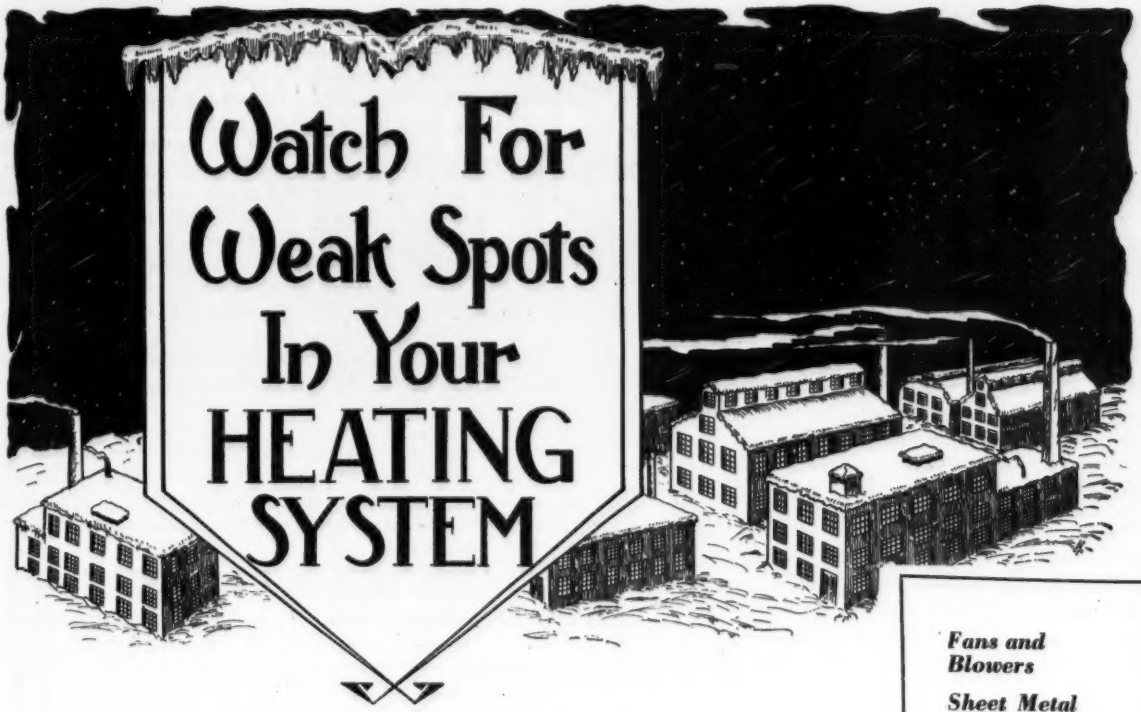
Two of the three motor, belt driven air compressors supplying compressed air for a variety of purposes in the plant of the Brown Paper Mill Co., Inc., West Monroe, La.



Courtesy: Sullivan Machinery Co.

FIG. 10

8-inch x 6-inch air compressor used for blowing cuttings from trimmer, general cleaning and miscellaneous pneumatic tools at the Claremont Paper Co., Claremont, N. H.



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the mills, for concrete cutting, removing old foundations, etc. Once a week, also, the air pressure is stepped up to about 100 pounds per square inch and all motors are thoroughly cleaned with the high pressure air.

For these few simple tasks, operations which could be economically and advantageously consummated in similar manner in almost any paper mill, some 200,000 cubic feet of free air are used, on the average, daily. The mill, incidentally, is one having a 24-hour capacity of 100,000 pounds of Kraft paper and sulphate specialties. The daily use of 200,000 cubic feet of air in compressor operations in no way measures up to the volume of air handled daily in the actual paper making processes in such a mill, it is true, but it is some indication of the demand for compressed air created by the common, everyday and incidental tasks which abound in almost every mill, large or small.

At the plant of the Brown Paper Mill, Inc., West Monroe, La., three single-stage air compressors of considerably larger capacity, two of which are shown in the accompanying view, are in service, furnishing a continuous supply of compressed air for a variety of incidental operations and purposes. Still larger and more powerful air compressors are in use in many paper mills furnishing compressed air for both major and minor operations and processes, such as the one shown in the final illustration driven by a 354-horsepower synchronous motor.

Many more installations of air compressors in paper mill services could be cited, but the foregoing will suffice as evidence of a growing demand for compressed air in the plants of the industry, be they large or small, in fairly large volume as well as in comparatively small quantities. These mills all have to handle relatively very large volumes of air in paper making processes proper, all which can be made available thoroughly washed and under moderate pressure.

With a truly abundant supply of clean, fresh air at hand, already at a pressure suitable for numerous services, and growing demand for compressed air on the part of the mills of the industry, for both minor and major operations, it would certainly seem that new economies in paper making should be within the reach of almost any paper mill striving to reduce production costs. It is also very evident that many such opportunities have, as yet, been overlooked.

To Hold Hearing on Fourdrinier Wires

Sidney Morgan, secretary of the United States Tariff Commission has just sent out the following notice of a public hearing on Fourdrinier wires, woven wire cloth and cylinder wires:—

"Notice is hereby given, pursuant to Section 336 of the Tariff Act of 1930, that a public hearing in the foregoing investigation will be held at the office of the United States Tariff Commission in Washington, D. C., at 10:00 o'clock a.m. on the 9th day of December, 1930, at which time and place all parties interested will be given opportunity to be present, to produce evidence, and to be heard with regard to the differences in costs of production of and all other facts and conditions enumerated in Section 336 of the Tariff Act of 1930 with respect to the following articles described in Paragraph 318 of Title I of said Tariff Act: namely, Fourdrinier wires and cylinder wires, suitable for use in paper-making machines (whether or not parts of or fitted or attached to such machines), and woven-wire cloth suitable for use in the manufacture of Fourdrinier wires or cylinder wires.

"This notice shall be published by posting copy thereof for thirty days prior to said 9th day of December, 1930, at the principal office of the Commission in the City of Washington, D. C., and at the office of the Commission at the port of New York, and by publishing a copy thereof prior to said date once each week for two successive weeks in 'Treasury Decisions' published by the Department of the Treasury and in 'Commerce Reports' published by the Department of Commerce."

Great Industrial Boom In Albany District

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., November 10, 1930—With the opening of the Port of Albany to World trade, Donald G. Kibbey, traffic manager of the A. P. W. Paper Company, prophesies a great industrial boom for the entire district. Since the movement for a Deeper Hudson was started in 1923 he has been among its firmest advocates and now with the project nearly completed he foresees the city's rapid development as one of the great ports of the World. As head of the traffic division of the Albany Port Commission he recently sent out many questionnaires to shippers to ascertain what commerce could be expected through this city and the replies aided the Technical Advisory Corporation in preparing the Deeper Hudson brief on which the case was won at Washington. Mr. Kibbey also contributed to the Deeper Hudson Committee detailed rate studies which pointed out vividly the advantages of a World port in the Capital District to the shipping interests not only in the Middle West but to all coasts in the country. His exhaustive studies placed in the hands of engineers also proved of great value in bringing the project to completion and his efforts were largely instrumental for his recent appointment as a member of the advisory committee of the Port Commission.

"With the savings that the Port of Albany has to offer shippers," he said, "shipping is benefitted and there is no question about the growth of trade. Large benefits will accrue to the Middle West and to the railroads through handling export, coastwise and intercoastal business through this city. It should represent a large saving to the railroads to make the transfer of freight to vessels at Albany rather than New York as it eliminates the haul of 150 miles to the seaboard. This city will also have the service of steamship lines which serve the South Atlantic, Gulf and Pacific ports and all carry cargo going to the West Coast. It will be just as practical for these lines to pick up cargoes at Albany as at any other port on the Atlantic and for many of the largest shipping centers of the Middle West the rates will be lower through this city. Albany is but a few hours of sailing time from New York which means that steamships can come here for cargoes and if less than full loads are obtained they can complete their cargoes at other ports."

It was largely through the efforts of Mr. Kibbey that shipping through the local terminal has progressed while the widening of the channel has been under way. Approximately fifty-five ocean vessels have landed in this city within the past five years bringing pulp wood to the A. P. W. Co. and many more shipments will be made over the waterway. The company also charters vessels for service to other ports in handling pulp wood from its mills. Plans call for the transportation of the product on a larger scale next year when it is expected that even better facilities will be available.

News of the New England Trade

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 10, 1930.—The Eastern Manufacturing Company, of Bangor and Lincoln, Me., manufacturers of Atlantic Bond, have been sending to the New England printers their very attractive advertising on this line of paper.

Irving Baxter, of the Baxter-Lane Company, New York City, was in Boston last week.

Ward R. Howard and Howell H. Howard, of The Howard Paper Company, Urbana, Ohio, called on their local distributors, John Carter & Co., last week.

M. A. Park, of the Holyoke Card and Paper Company, was in Boston last week, calling on distributors of Ranger Cover, made by that company.

The Lockwood Envelope Specialties, Inc., Westfield, Mass., has been incorporated to deal in stationery. The capitalization is $2,500. The incorporators are Ray L. Lockwood, president and treasurer, 81 Craiwell avenue, West Springfield, Mass., Frank Auchter and Elbert L. Lockwood.

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The 56th Consecutive Annual Edition

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PROTECTION OF INVENTIONS

As a service to the pulp and paper industry the Patents Committee of the Technical Association of the Pulp and Paper Industry outlines in this, its second contribution, the nature of trade secrets and methods to be used for their protection.

Many inventors whose discoveries have found practical application in the industries prefer to protect them by keeping them trade secrets. Thus it is possible to secure a monopoly that is in many instances more enduring that that given by the patent laws. Some manufacturers also resort to this means to keep from their competitors details of unpatentable discoveries or of methods for which it is impossible to secure a valid patent, as in cases where the inventor has forfeited his right to a patent or where the prior art is so close that patent tribunals will likely hold the change to be a matter of mere mechanical or chemical skill. Some manufacturers hide behind the protection of a trade secret to keep from some patentee the fact that they are infringing or pirating his patent. Under this last state of affairs it is often possible to persuade a federal court to force the manufacturer to disclose his secret so that it can be compared to the disclosures of the patent.

Some inventions lend themeselves more readily to protection by trade secrets than others, while many inventions cannot possibly be protected by this means. For instance, many chemical compositions defy analysis and cannot be forced to yield any indication of the method by which they were produced. On the other hand devices sold on the open market can be easily copied by competitors.

The greatest drawback to trade secrets is the fact that they are so difficult to protect. It is true that courts will readily grant relief against any one who steals the secret or gets it through a dishonest employee, but this does not afford protection against the many others who may come upon the secret honestly. Furthermore if the product of a trade secret is on sale or in use for more than two years the right to patent protection is forever waived. A notable instance of such a state of affairs is discussed in "What's Patentable In Paper Making?", PAPER TRADE JOURNAL, October 3, 1929.

Some inventors seek to protect their trade secrets by taking out a patent containing misleading information or ommiting an essential detail. Needless to state, when this is proved to the satisfaction of a court, the patent will be declared invalid. Other inventors seek to avoid the rule that two years commercial use of the secret forfeits the right to a patent, by filing an application and keeping it pending as long as possible. If during the first few years of its pendency, the secret is rediscovered by another, they take out the patent. If not they either abandon the application or try to keep it pending for several more years.

An excellent way to augment the protection of a trade secret is to select distinctive trade marks, labels and containers for the product of the process. If the product has any merit at all and plenty of money is spent on advertising and in making the trade mark a household word, the trade mark may soon become more valuable than the trade secret itself or any patent that might have been secured thereon.

A notable example of this is the drink known as Coca Cola. Many claim to have discovered the secret and many more that their particular drink is better, but still the people insist on drinking Coco Cola. The reason for this is that the public soon comes to associate the excellence of an article with the trade mark, label and container and has to be educated all over again every time a new product is put on the market. Some dishonest competitors try to take advantage of this by imitating the containers, labels and trade marks of well established products, but the courts are always ready to restrain them and give triple damages to the injured party.

IMPORT COMMITTEE'S ANNUAL REPORT

The paper industry through the activities of the Import Committee of the American Paper Industry has set a new high water mark of accomplishment in the fiscal year just closed. The outstanding developments of the year involve three fields of activity, as follows: The completion of a revision of the tariff, scientifically written as it concerns the paper industry, and the ability of the industry through the Import Committee to take instant advantage of the changes made; The development of the Foreign Service for the individual advantage of the subscribers, as well as a better organization of its part in the normal functions of the committee; A closer scrutiny and effectiveness of the general committee activities.

Since the last annual report a new tariff law has been enacted. By utilizing the facts disclosed through the years of enforcement work by the Import Committee, the paper industry has been able to secure important changes in the Act of 1922. Standing almost alone among the basic industries, the paper industry realized that tariff making was no longer to be done by log-rolling, but by the assemblage of cold facts as to foreign competition and domestic conditions, so that tariffs may henceforth be written on the basis of levying duties just sufficient to equalize the difference in producing conditions in the United States and foreign countries.

The paper industry was most successful in securing the changes

which facts in the possession of the Import Committee showed to be necessary. Because of its long experience, and its already functioning office and organization, it was able to take instant advantage of the changes in the tariff law and co-operate with the customs officials to insure the proper classification, in accordance with the changed terms of the law, of all types of paper coming from foreign sources.

The Import Committee maintains a foreign office for the purpose of securing current information as to the conditions in foreign paper markets, so that the home office may be advised in advance of shipments which are likely to be undervalued. In other words, the function of the Foreign Office is to check foreign competition at the source. As a result, during the year just closed, the foreign office, in addition to its normal activities involving acquaintance with conditions in all parts of Europe, has provided the industry with reports on general paper making conditions. For instance a general survey, accompanied by up-to-date statistics, was made of the kraft paper situation in Europe. This with data available in this country, made it possible for any domestic manufacturer to have before him a world's picture of that industry.

The following table tells its own story of the work of the year:

Cases awaiting appropriate action	1,973
Cases decided during the year	1,666
Cases won (involving increases in duties or penalties, or both)	1,153
Percentage of cases won	69.3
Percentage of cases won since formation of the Committee	73.7
Total cases recorded September 30, 1929, from date of Committee organization	4,853
Total cases recorded September 30, 1930	5,671

The following table shows the status of the committee's work subdivided by groups, though in analyzing this table it must be remembered that in some groups a small number of cases handled has involved test issues of greater magnitude than may be included in other groups where the figures are larger.

Grade	Pending	Favorably Decided	Unfavorably Decided	Tried, Awaiting Decision
Absorbent	2	35	27	1
Board	45	168	56	5
Cardboard	...	12	3	...
Book	26	505	119	8
Fine	1,197	320	34	5
Miscellaneous	106	99	30	4
News	22	122	20	4
Specialties	165	538	131	25
Tissue	317	497	320	90
Wrapping	93	313	191	16
Totals	1,973	2,609	931	158

Foresters Tour Northern New York

CARTHAGE, N. Y., November 10, 1930—Officials of the Empire State Forestry Association recently completed a forestry tour of principal sections in Northern New York under the supervision of John E. Kieb, forester for the St. Regis Paper Company. The party started from Watertown and motored to the forest plantation and power plant at Black River owned by the Northern New York Utilities. Proceeding down the Beaver River a visit was made at Belfort where the extensive forest plantation was inspected. The forestry project of the St. Regis Paper Company was also traversed before the party proceeded up the river to visit some of the older plantations. Among those making the trip were E. A. Sterling, of the West Virginia Paper and Pulp Company; George W. Sisson, Jr., president of the Racquette River Paper Company; John N. Carlisle, president of the Empire State Forestry Association; Prof. A. P. Recknagle, of Cornell University; Prof. Nelson C. Brown, of Syracuse University; C. E. Behre, of the Northeast Experiment Station; G. H. Collingwood, of the American Forestry Association, and Prof. J. A. Cope, of Ithaca.

Complaint Against Wheelwright Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 12, 1930.—Formal complaint has been filed by the Federal Trade Commission against the George W. Wheelwright Paper Company, of North Leominster, Mass.

The complaint calls attention to the fact that the company produces what it terms "Italiano Hand Made Vellum" papers which the Commission charges "are in truth and fact neither Italian made, nor are they hand made nor are they made of genuine vellum." The Commission charges that this expression deceives the public. The complaint, in full is as follows:

"Acting in the public interest, pursuant to the provisions of an Act of Congress approved September 26, 1914, entitled, "An Act To Create a Federal Trade Commission, to define its powers and duties, and for other purposes," the Federal Trade Commission charges that the corporation named in the caption hereof and hereinafter designated respondent, is using unfair methods of competition in interstate commerce in violation of the provisions of Section 5 of said Act, and states its charges in such respect as follows:

"PARAGRAPH ONE: The respondent was incorporated under the laws of the State of Massachusetts in or about 1880 and has been and is engaged in the production of domestic made machine manufactured paper for social and business purposes. It has its office and principal place of business at North Leominster, Massachusetts, and has paper factories at North Leominster, and Hardwyck, Massachusetts. In the regular course of its business respondent is engaged in selling and in transporting its said merchandise from its said factories to its customer purchasers located not only in the State of Massachusetts, but also in other States of the United States and has been so engaged for five years and upwards.

"PARAGRAPH TWO: During five years last past and upwards the respondent has been engaged in advertising and otherwise representing certain of its said paper products as 'Italiano Hand Made Vellum.' The said products of respondent have been represented as aforesaid in respondent's advertising in journals in the paper trade and in swatch books issued and distributed by the said respondent. The said swatch books are and have been during the said described period sent by respondent to jobber customers who in turn distribute said swatch books to their retail customers. The said retail customers exhibit said swatch books and the samples contained therein to their customers, users and consumers of paper products.

"PARAGRAPH THREE: The said products designated as aforesaid, 'Italiano Hand Made Vellum' are in truth and fact neither Italian made, nor are they made by hand nor are they made of genuine vellum. The representations of said products as 'Italiano,' as 'Hand Made' and as 'Vellum' each has the capacity and tendency to, and actually does deceive customers and prospective customers of retailers handling respondent's products and has the capacity unfairly to divert trade from competitors of respondent. All of said terms used by respondent are misleading, deceptive and false and are all to the prejudice and injury of the public and of respondent's competitors and constitute unfair methods of competition in commerce within the intent and meaning of Section 5 of the Federal Trade Commission Act."

Norwegian Pulp Mills Close

WASHINGTON, D. C., November 12, 1930.—In addition to those pulp mills that have previously announced their intention of shutting down, the Kraastad and Mjondalen chemical pulp mills, both at Dramman, Norway, have found it necessary to suspend operations according to a report to the Department of Commerce from Commercial Attache M. H. Lund, at Oslo.

The reason is not alone the fact that prices are unreasonably low at present, says the report, but the sale of pulp is very difficult even at the low prices prevailing. Both of these mills manufacture unbleached sulphite. Bleached sulphite mills are not being as much affected by the price depression as most of their product is used for the manufacture of artificial silk,

A Structure can be no stronger than its FOUNDATIONS

By CARL R. MILLER

No. 6 in a series of advertisements describing the position of The Mathieson Alkali Works in the chemical industry

WHERE plodding oxen once came for a cart of precious salt...today a modern Mathieson plant produces tons of useful chemicals needed for Industry's mills and factories. Near mighty Niagara, unharnessed for ages...today a Mathieson plant extracts power from the falls and elements from air and minerals, transforming them into chemical products that protect the lives of millions...products which cost no more yet serve better.

These modern miracles would have been impossible without strong foundations of Resources, Research and Service...foundations laid in the pioneer days of the chemical industry. That is why Mathieson chemicals represent quality born of seasoned experience...that is also why Mathieson service assures satisfaction to every purchaser.

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Soda Ash...Caustic Soda...Bicarbonate of Soda...Liquid Chlorine...HTH (Hypochlorite)...Ammonia, Anhydrous and Aqua...Bleaching Powder...Sulphur Dichloride...PURITE (Fused Soda Ash)

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Great Structures Rest on Strong Foundations

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

The Use of Chlorine for Slime Elimination*

By O. T. Birkeness[1]

In speaking of slime in regard to paper mills, we speak of something with which practically every man in contact with paper mill work is familiar. It manifests itself in many ways in the mill. We will list a few of the troubles caused by slime which have been reported and also the ordinary mode of occurrence. In this paper, we are referring to slime of biological origin, that is, one where living organisms through their growth and multiplication actually build up the slime.

Slime in the mill normally comes from a water supply carrying slime organisms, or as is often the case, from a stock supply such as ground wood in which the slime organisms are carried in the stock itself. It occurs in the form of a slimy growth in chests, head boxes, screens, pipes, conduits, felts and stock tanks. The nuisance caused by slime may be partially tabulated as follows.

1. In a fresh water system, it will have a tendency to coat the walls of settling basins or pump chambers and clog pipes and conduits to such an extent that the cross sectional area is often cut down to a fraction of what it was originally. The slime organisms attach themselves to the walls of the pipes and conduits and grow as a slimy coating which catches particles of dirt and clay which may be in the water with the result that by the consolidation of these materials, eventually you have a hard scale built up in the pipe, only the surface giving indication of slime after the material solidifies.

If a filter plant is operated, slime will give trouble, particularly in the summer, by building up in the filters themselves. This will cause clogging of the filters and growth of mud balls, and we have found cases during the warm weather in the summer where it was necessary to back-wash the filters after a run of only a few hours in plants, where during the cold weather when slime does not have the opportunity of growing so readily, the filter runs were normally from 15 to 30 hours. This cuts down on filter plant capacity and efficiency and results in increased operating costs due to increased washwater, coagulants (as much as 20 percent saving has been obtained), and labor in sand bed renewal; as well as increased capital costs, due to the necessity of having a filter plant of large enough capacity to supply sufficient water of the desired quality to the mill under very adverse conditions.

Slime in Head Box

2. Slime will grow in the head boxes and throughout the mill to a point where it begins to break away and comes out on the paper in large pieces forming slime spots, and in many cases, causing breaks on the paper machine with resultant loss of time for culling of paper. This is the trouble which is most evident in a mill, but it has been found that while this trouble may be serious, slime has another direct effect on paper quality, which while not so obvious, may be much more serious. This is the fact that there are small particles of slime coming onto the wire with the stock continuously.

This slime is incorporated in the paper and carried through to the drier train. These slime particles prevent intimate contact of the fibers and the result is a paper which has a relatively loose formation, and in some cases is filled with pin holes, because when the slime hits the drier train, the particles break down under the heat.

3. Slime attacks the cellulose and decomposes it resulting in stock shrinkage or loss which in many cases amounts to an appreciable percentage of the total production. This is called invisible shrinkage.

4. It causes dirty wire due to the formation of slime on the wire itself causing gradual blinding with resultant bad effects.

5. It shortens the life of felts due to the slime organisms actually living in and consuming the felts.

6. Slime causes clogging of the felts with slimy material thereby decreasing the dewatering properties materially.

7. It results in clogging screens and save-alls causing reduced efficiency.

8. It requires increased labor in cleanup due to necessity of scraping and scrubbing the surfaces to which the slime has adhered.

9. There is a loss of production due to necessity of shutting down machines more frequently for washing, especially during the warm weather.

10. There is also a change of pH of stock due to bacterial decomposition of slime into acid products with resultant bad influences throughout mill operation.

The foregoing list of nuisances caused in a paper mill by slime occur to a greater or lesser extent in practically all mills. The elimination of this slime is a problem on which much time, thought and money was expended over the years. The use of chlorine in slime elimination dates back many years, but the use of controlled chlorination with slime elimination as the primary object, dates back only a very few years. The success of this process was so immediate and has proven so satisfactory that its use in the mills has increased very rapidly.

Controlled Chlorination

In this system, the best procedure is to have a survey of the mill made by some man thoroughly familiar with this work, and introduce chlorine either into the fresh water system or into the white water system at points recommended by him. It is almost impossible to go into a mill and state definitely just

* Presented at the first meeting of the Lake States Section of TAPPI, Menasha, Wis., Oct. 17, 1930.
[1] Engineer Wallace and Tierman, Newark, N. J.

where the chlorine should be put in for the best results and how much chlorine it will be necessary to put into the system to attain these results. However, if the work is done under the supervision of a man familiar with this work, he can very quickly, after a short period of operation, decide whether he is getting the results he should from the initial point of application, or whether it would be best to change this point of application thereby gaining better results, or what amounts to the same thing—getting the same results with a smaller amount of chemical.

No Serious Difficulty Experienced

The fear is often expressed that in starting a chlorination system in a mill so much slime and accumulated dirt will be loosened that several days run of paper may be ruined. I have personally supervised the starting of chlorination systems in many mills and in no case have we experienced any serious difficulty from this source. Chlorine added to a water supply in normal amounts does not act as a purgative, suddenly loosening all accumulated hard slime and scale, but acts very slowly, attaching first the soft slime and then gradually working on the hardened material. It may be a matter of months before the system is entirely cleaned up, but in the meantime, no new slime has had an opportunity to form and the disappearance of the old slime is so gradual that it will cause no trouble.

Chlorine Requirements

The problem of slime elimination is never alike in any two mills and the chlorine consumed per ton of product manufactured varies greatly. A rough tabulation of the chlorine necessary can be given as follows:

Paper board: From 1 pound of chlorine per ton to 4 pounds of chlorine per ton, with an average of about 2 pounds of chlorine per ton.

Book paper: From ½ pounds of chlorine per ton to 2 pounds of chlorine per ton, with an average of about 1 pound of chlorine per ton.

Kraft paper: From 1 pound of chlorine per ton to 3 pounds of chlorine per ton.

Tissue paper: From 1 pound of chlorine per ton to 2 pounds of chlorine per ton.

Roofing felt: From 2 pounds of chlorine per ton to 5 pounds of chlorine per ton.

These figures are at best a rough approximation since the amount of chlorine consumed will depend upon the character of the fresh water, the point of application, whether ahead of settling basin, between a settling basin and filters, after filtration, or as in many mills, in a raw water which has no other treatment. Some water supplies carry a high content of organic matter. This water will consume a large amount of chlorine as the chlorine will to a large extent unite with this organic matter, thereby increasing the quantity necessary for complete sterilization.

Necessary for Satisfactory Operation

In the operation of a white water recovery system, chlorination becomes almost a necessity for satisfactory operation. This results mainly in the fact that the water is recirculated in the mill and kept at a relatively high temperature, which makes ideal growing conditions for bacteria. For this reason, it is quite a common thing to find white water storage tanks and other equipment not only badly coated with slime, but giving off a very offensive odor due to decomposition of stock by the slime. The common practice when chlorination was first used, was to try to put in enough chlorine in the fresh water to eliminate slime throughout the system. It has been found, however, that in many cases, it is better practice economically to cut down on the amount of chlorine added to the fresh water and add chlorine directly to the white water system, as it is very hard to get enough chlorine into the fresh water system to completely eliminate the slime throughout the white water system. It is also very costly. There are a number of mills now operating in this manner with excellent results and at a comparatively low cost. In several mills, chlorine is added directly to the stock, either in the fan pump, head box, or stuff chest. This method has given excellent results.

Effect of Chlorine on Color

Whenever talking of the use of chlorination for slime elimination, the question of the effect of the chlorine so used upon the color, comes up. Our experience in a number of mills up to date indicates that sufficient chlorine may be applied to control slime without interfering in any way with the normal process of coloring. It was first thought, when using chlorination, for slime elimination, that satisfactory results could not be obtained without carrying a high residual of chlorine throughout the system, namely, from .4 to .6 parts per million. We have found, however, that in many cases we have gotten excellent results where the residual chlorine in the system was very low, in many cases disappearing before the water got entirely through the system.

Accurate Control Should be Kept

In using chlorine for slime elimination, an accurate control should be kept at all times on the amount of chlorine fed into the system. This should be done for two reasons: first, to keep your chlorine content at a low uniform residual which is just sufficient to accomplish the desired results without interfering with mill operation; second, to obtain actual saving of chlorine since only the necessary amount of chlorine to accomplish the desired results is used. This saving in chlorine will very often more than pay for the necessary control equipment. In this connection, I would like to suggest that some system of routine test control be established on the chlorination similar to that used on many of the other mill processes. By the use of this control, the chlorine will be increased or cut down as necessary, and you will find that during the winter time, you will use only a small fraction of the amount of chlorine that it is necessary to feed in during the hot summer months. Do not, however, shut off your chlorine treatment during the winter time. If you do, this will give the slime an opportunity to build up very slowly through your pipe lines, and the following spring when starting up the chlorine treatment, you will again be faced with the problem of cleaning out residual slime throughout the system. The application of a very small amount of chlorine during the winter time will prevent this and will leave you with a clean system to face the slime season and your problems will be minimized to a large extent.

Benefits of Slime Elimination

The question now comes up, what will we gain in our mill by slime elimination. The benefits to be derived can be summarized as follows:

1. Decrease in stock loss by prevention of bacterial decomposition of cellulose.
2. Increase in production by eliminating slime breaks and slime spots and frequent shut-downs for washing up.
3. Pulp of a better quality, takes the dyes better, producing a brighter sheet of paper.
4. Keeps all pipes, flow lines, screens, regulators, save-alls and sewers free from obstructing slime masses.
5. Keeps the filters from clogging and lengthens felt life. Mills have reported that felt life has been increased from 15 to 50 percent.
6. Increases efficiency of water filters.
7. Permits better closing up of system, larger uses of white water, thereby minimizing stream pollution and saving in heat, chemicals and stock contained in the white water.
8. Prevents variations in pH caused by acid forming properties of bacteria.

Bleaching Influence on Viscosity of Soda Pulp*

By J. H. Ross[1], C. R. Mitchell[2] and F. H. Yorsten[3]

The viscosity of a solution of an unbleached pulp is considerably greater than that of a solution of the same pulp after bleaching. In part this loss in viscosity depends on the conditions to which the pulp is exposed during the bleaching. Part of this drop may be inevitable but if viscosity gives a measure of average micellar size then in bleaching, viscosity should be retained as close to the maximum as it is economically possible.

Alpha cellulose is supposed to gauge micellar size to some extent, but in reality the alpha cellulose of a pulp may be increased whilst its viscosity has dropped very considerably. This we have found to happen when a bleached pulp is subjected to the attack of dilute alkalis at high temperature. Okada, Mutsuda & Hayakawa[4] encountered the same phenomenon when bleaching pulps intended for artificial silk. The copper number test is also advocated as a control for over bleaching. Here again a very wrong impression may be gained by the use of the test. Clibbens and Ridge[5] referring to cotton state that the chemical measurement of the extent of modification is valueless as a general guide to the loss of strength which has occurred. These authors claim that in the case of copper number, which they believe to be the most general indication of chemical change which accompanies modification, a change of one point may result in a complete loss of strength, a 50 per cent loss in strength or in an insignificant loss in strength depending on the type of chemical action to which the material has been subjected.

In bleaching it is customary to bring the pulp as nearly as possible to a definite degree of whiteness. The measurement of colour is, however, somewhat difficult and towards the end of the bleaching process where colour is hardest to measure viscosity may decrease very considerably for a very small change in colour.

The present communication deals with an attempt to utilize the cuprammonium viscosity test, described by Bialkowsky[6] as a means of fixing the proper set of conditions to be used in arriving at a pulp bleached to a shade desired and estimated by means of optical instruments. The test has been found particularly useful in connection with experiments on the influence of hydrogen ion concentration in bleaching experimental soda pulps.

Changes in Hydrogen ion Concentration During Bleaching

Accurate measurements of pH in oxidizing solutions have been made possible by the form of glass electrode which MacInnes and Dole[7] devised, in conjunction with a vacuum tube potentiometer due to Elder.[8]

Commercial Javelle water (sodium hypochlorite solution) and ordinary lime bleach contain free alkali and are definitely alkaline even at the dilutions used in low consistence bleaching; yet it is generally believed (correctly as we think) that the first reaction in such bleaching is addition of hypochlorous acid to the lignin or coloring matters, whereby the bleach liquor should become even more alkaline. Actually we have not observed any great change in hydrogen in concentration of bleach liquor when unbleached pulp is first dipped into it. It is possible that this negative result is due to a balance of two effects. first sorption of alkali by the cellulose, second, addition of hypochlorous acid to the lignin, with the net result that no large change in alkalinity is observed. In one experiment unbleached sulphite was soaked in a soda solution and brought into equilibrium with it at pH9, pressed out, and then dipped in a soda bleach liquor also at pH 9. The alkalinity immediately rose half a pH unit.

As stated no such initial increase in pH is ordinarily observed On the contrary the pH falls continuously as bleaching proceeds and towards the end of the operation the liquor passes the neutral point and becomes slightly acid, reaching a pH of 6.5 or 6. The change is illustrated in figure 1. Bergqvist.[9]

Following pH changes by a colorimetric method, obtained values of about 6.8 in exhausted bleach liquor.

The gradual loss in alkalinity is presumably due to various causes in which sorption of alkali by the cellulose may play a part at first. Oxidation of incrustants, as opposed to chlorination, further contributes, since alkali or alkaline earth hypochlorite which is alkaline because of hydrolysis, is transformed into a neutral chloride. Initially the bleach liquor contains free base over and above that produced by the hydrolysis of hypochlorites and finally it is more acid than a solution of the chlorides so that some acidic compounds must be produced during bleaching.

It may be recalled that Gibbens & Ridge[10] found the degradation of cellulose by hypochlorites to proceed fastest at the neutral point and to be very slow at pH 12 or 13. In our initial experiment on bleaching soda pulps we compared ordinary single stage low consistence bleaches with others in which an attempt was made to keep the pH between 9 and 10 by additions of lime-water from time to time. While there was no difficulty in measuring the pH at any moment it was found that accurate regulation of it would require continuous attention which was not practicable in view of the long bleaching time under the conditions chosen (bleaching to complete exhaustion at 2 per cent consistence). At times the pH was found to have dropped to 8 or 7.5. In spite of this unsatisfactory regulation, a comparison of the results is of some interest. Graphs of viscosity vs. bleach consumed and vs. Hess-Ives colors show the alkaline conditions to be decidedly more advantageous, though the advantage is greatest in bleaching to a relatively poor color. The greater difference in results when bleaching to a low color seems not unreasonable if it is assumed provisionally that the degradation of the cellulose is proportional to the bleach consumed by it, in which case in acting on a nearly pure cellulose the change in viscosity for a given bleach consumption would be independent of the pH, although the time required for reduction of the bleach is very different. However, this point has not been checked experimentally.

Similar results were obtained in bleaching the same pulp after partial delignification by treatment with chlorine and exhaustive washing with water. Here again the curve of viscosity vs. bleach consumed lies higher and is steeper under the more alkaline conditions. A similar advantage is shown if one compares the viscosities at the same color rather than at the same bleach consumption.

It may be remarked also that the chlorinated pulp showed slightly higher color than the unchlorinated when bleached to the same viscosity, but the difference is practically within the experimental error of color measurement with the Hess-Ives tintometer. In any event chlorination followed by water washing is not the most satisfactory preliminary treatment, as was shown by the experiments on two-stage processes described below.

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* Presented at the fall meeting of TAPPI, Erie, Pa., Sept. 3-5, 1930.

[1] Chemist, Forest Products Laboratories of Canada, Montreal, P. Q.
[2] Junior chemist, Forest Products Laboratories of Canada, Montreal, P. Q.
[3] Asst. chemist, Forest Products Laboratories of Canada, Montreal, P. Q.

[4] Cellulose Ind. (Tokyo) *5* 225 (1929).
[5] Shirley Inst Mems 85 (1928).
[6] Tech. Assoc. Papers, P. 195 1930.
[7] J. Ind. Eng. Chem. Analytical Ed. *1* 57-9 1929.
[8] J. Amer. Chem. Soc. *51* 3266-72 1929.
[9] Papier—Fabrikant *26* 593-604 1928.
[10] Mem-Shirley Inst. *6* 1-33 (1927).

Chlorination

In bleaching in a single stage, within addition of alkali to secure improved viscosity, the rate of bleach consumption is considerably slowed. In particular it is out of the question to add enough alkali at the beginning of the bleach to maintain the pH above, say, 10 at the end because the reaction time is enormously increased. Some experiments on bleaching rapidly at or near to the neutral point in the early stages and finishing alkaline, and also on bleaching with an excess of bleach and washing when the proper color was obtained gave inconsistent and not very promising results. Some chlorination method seemed more likely to lead to a practical laboratory process for bleaching experimental pulps with minimum loss in viscosity.

Chlorinations were performed as follows: The pulp was soaked, pressed to 20 per cent consistence, crumbled into small lumps by hand, and exposed to chlorine gas for five minutes. After blowing away the excess of gas, the pulp was thrown into enough of the liquor used for washing to make about a two per cent suspension, let soak with occasional stirring for fifteen minutes, drained, and thoroughly washed with tap water. The pulp was then again pressed, a sample being retained for the viscosity test, and retreated in the same way. Operations were all at room temperature throughout. The table shows the drop in viscosity at each successive chlorination.

	VISCOSITY			
	A	B	C	D
Washing medium	water only	$\frac{N}{10}$ NaOH	$\frac{N}{10}$ Na_2SO_3	N_2SO_3
Chlorination 1	106.8	133.9	122.5	110.1
2	85.4	91.9	75.3	101.0
3	54.6	64.6	60.5	89.2
4	47.8	24.0	...	...

The viscosity changes are, however, only part of the story, for delignification has proceeded much farther with alkaline conditions. While A and D contain about 0.8 per cent lignin even after two chlorinations, the amount in B and C at the same stage was too small to be determined by the usual method. While A_3 and D_3 are to all appearances unbleached, B_3 shows a fair color, the Hess-Ives readings being 88.5 red, 85, green, 79 blue.

It may be remarked in passing that a reliable method for determining lignin in small amounts would be of value in studies of the early stages of bleaching, where the lignin remaining is less that 1 per cent of the pulp but at which point comparative color readings are of little value.

While chlorination followed by alkali extraction seems to secure the maximum ligning removal with minimum loss of viscosity as a first stage process, an indefinite number of repetitions of the procedure does not give satisfactory results. The color of B_4, while good is not so good as could be obtained by bleaching to the same viscosity in one stage with the addition of lime. The optimum conditions so far found consist in a two-fold chlorination and alkali extraction followed by bleach under alkaline conditions. After the double treatment, so little bleach is required to give a good white that it was found possible to keep the hydrogen ion concentration absolutely fixed by means of the usual M_{30} borate and phosphate buffers; since the concentration of soda bleach at the low consistence used was small compared to that of the buffer. Initial and final pH values were checked by the glass electrode. Pulp No. 1.4 having an original viscosity lower than that of pulp No. 4.5 used in the previous experiments, was twice chlorinated and alkali extracted. The viscosity was then 63.0 centipoises. Samples of the treated pulp were bleached to exhaustion at 40 deg. C and 2 per cent consistence with sodium hypochlorite equivalent to 0.7 per cent and 1.4 per cent of standard bleaching powder, based on the weight of the treated pulp. Tests were made at four different hydrogen ion concentrations. The colors attained were sensibly the same for the same bleach consumption. The mean color values are 88.8, 84.4, 80.2, for the lower bleach consumption and 90.1, 87.2, 83.8, for the higher. The graph (Fig. 5) shows the final viscosity vs. pH. It will be seen that the optimum condition is at pH 10 or higher.

Pulp 4.5 used in the single stage bleaching and chlorination experiments, was bleached by the last described process, finishing at pH 10.0. The viscosity of 49 and colors 92, 88, 85 are the best so far obtained, as may be seen from the color—viscosity graph, where these values are inserted for comparison with those obtained with once-chlorinated pulp.

Correction

In the PAPER TRADE JOURNAL of August 28, 1930, TAPPI Section, Page 90 the tables under "Accuracy of Method" in the article entitled "Measurement of Average Fiber Length" by John B. Calkin should appear as follows:

Accuracy of Method

STATISTICAL ANALYSIS OF AVERAGE FIBRE LENGTH MEASUREMENT

STATISTICS ON 200 FIBRE-BASIS

Sample	Mean for 200 meas. (relative)	Mean for 200 meas. (in mm.)	X^2 (relative)	For Single Measurement S. D. (relative)	P. E. (relative)	P. E. (in mm.)	P. E. of 200 (in mm.)
1	8.17	0.71	37,855.50	11.07	∓7.47	∓0.649	∓0.046
2	8.43	0.73	38,930.00	11.11	∓7.49	∓0.651	∓0.046
B	9.00	0.78	47,228.75	12.47	∓8.41	∓0.731	∓0.052
F	8.35	0.73	43,585.75	12.58	∓8.50	∓0.740	∓0.052

Formulae [6]

$$\text{mm.} = \text{relative} \times 0.087 \text{ mm.}$$

$$\text{S. D.} = \sqrt{\frac{\Sigma X^2}{n} - M_x^2}$$

of each measurement where

S. D. = Standard deviation
X = actual measurement
X^2 = sum of squares of actual measurements
M_x = mean (average) of measurements
n = number of measurements
P. E. = ∓0.6745 S. D. of each measurement

$$\text{P. E. mean} = \frac{\mp \text{P. E. of each measurement}}{\sqrt{n}}$$

[6] From Mr. Owen of Maine Experimental Station, Orono, Maine.

Measurements on Commercial Sample of Spruce Fiber

(200 FIBRES USED TO OBTAIN EACH AVERAGE)

Sample	Av. fibre length	Fibre Distribution 0.1 mm.	0.1-0.5 mm.	0.5 mm., etc.
No. 1	0.71	30.5%	36.0%	33.5%
No. 2	0.73	28.5%	37.5%	34.0%
B	0.78	27.5%	39.5%	33.0%
F	0.73	34.0%	37.0%	29.0%
Mean for 800 fibres	0.74	28.5%	37.5%	34.0%

Formulae

$$\text{P. E.} = \mp 0.6745 \sqrt{\frac{d^2}{N-1}}$$

$$\text{P. E.} = \mp 0.03 \text{ mm.}$$

4 determinations

$$\text{P. E.} = \sqrt{(PE)^2_{\text{No. 1}} + (PE)^2_{\text{No. 2}} + (PE)^2_{B} + (PE)^2_{F}}$$

P. E. of mean, not single observations.

Masonite Corp. Fellowship

A research fellowship established by the Masonite Corporation of Laurel, Miss., has been awarded to E. L. Foreman, Nashville, Tenn., a graduate student at the Institute of Paper Chemistry affiliated with Lawrence College at Appleton, Wis. Mr. Foreman is a graduate of the University of Illinois.

Notice of the creation of the fellowship was received in joint communication from Ben Alexander, Wausau, president of the Masonite Corporation; Brown Katzenbach, Chicago, general manager; and Robert Boehm, Laurel, Mississippi, chief of research.

The fellowship is established for three years and will sponsor special research conducted with the pulp and paper industry.

Seth L. Bush Leaves Moore & White

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., November 11, 1930.—Seth L. Bush, research manager for the Crocker-McElwain and Chemical Paper Manufacturing Companies up to a few months ago when he resigned to take a position with the Moore & White Company of Philadelphia has resigned from the latter organization and returned to Holyoke. His future plans are not yet announced.

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts and Bibliography of the Technical Association of the Pulp and Paper Industry

Clarence J. West, Chairman

For photostatic copies of articles appearing in the Abstract Section, address the chairman of the Abstracts Committee, Dr. Clarence J. West, National Research Council, 21st and B Streets, Washington, D. C. The charge for this service is 25 cents per page. Copies of United States patents may be obtained from the U. S. Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Beating

Extractor for Beating Engines. Walter Werner assignor to The Noble and Wood Machine Co. U. S. pat. 1,726,874, Sept. 3, 1929.—The midfeather divides at one end to form diverging walls which extend across and block the usual free way between the end of the midfeather and the wall of the tub. Each of the diverging walls has an opening, the two being in alignment, and a perforated tubular shell is secured in them. The shell thus forms a covered passageway into which the whole of the stock must pass when it is being circulated in the beater. The shell preferably has a natural capacity somewhat less than would be required to permit the ordinary free flow of the work there through without increasing its rate of travel, and when the beater is running normally the entrance to this passageway is completely submerged. Mounted in the shell, at the inlet end, is a propeller to force the stock through at a comparatively high speed, thus overcoming any tendency to clogging the perforations.—A. P.-C.

Beater Control. Arthur B. Green. Paper Trade J. 89, No. 21, 56-57 (Nov. 21, 1929).—A brief outline of the development of the Green beater drag for the control of beater operation, with a description of the instrument and discussion of its performance.—A. P.-C.

Method and Apparatus for Removing Heavy Impurities from Breaker Beaters. Lloyd T. Murphy. U. S. pat. 1,726,756, Sept. 3, 1929.—The essential feature of the invention consists in equipping a breaker beater both with a continuous pulp extractor and with a continuous junk remover. The latter is preferably constituted by a pit located at the side of the beater and into which the junk settles. It is removed by means of a bucket elevator, which scrapes the bottom of the pit and discharges the junk in an overhead box. It is washed with water to remove any adhering stock, and the wash water is returned to the beater while the junk is sent to the sewer.—A. P.-C.

Chemists and Beater Furnish. Paul Torie. Michigan Paper Co. Paper Mill 53, No. 1, 4 (Jan. 4, 1930).—A brief discussion of actual conditions existing today in the various mills regarding the relationship between the technical and manufacturing departments as regards the beater furnish.—A. P.-C.

Beating and Vertical Hydrator. P. E. Hodgdon. Vertical Hydrator Co., Chicago. Paper Mill 53, No. 3, 2, 6, 8 (Jan. 18, 1930).—A description of the construction and operation of the vertical hydrator, with a discussion of the changes effected in paper making fibers in the course of beating and their influence on the strength of the paper made therefrom, bringing out more particularly how the vertical hydrator gives a proportionately much higher hydration and lower cutting effect than the usual types of beaters.—A. P.-C.

Improvement to Conical Refiners. August Avot. Fr. pat. 665,318.—In order to prevent stagnation of the stock between the liner bars of Jordans particularly the lower bars near the stock inlet, a suitable agitator is provided, which gives a slight transverse motion to the stock at the point where it reaches the bars.—A. P.-C.

Improved Kollergang. Victor Antoine. Fr. pat. 664,098.—A double-walled construction is specified for the trough, which may or may not be divided into two or more compartments. Steam or other heating medium is introduced between the walls to heat the material under treatment.—A. P.-C.

Vertical Hydrator. E. B. Fritz. U. S. pats. 1,528,201, March 3, 1925; 1,556,926 and 1,556,927, Oct. 13, 1925; Paper Trade J. 90, No. 1, 45-46 (Jan. 2, 1930).—A. P.-C.

Indicating Device for Beaters. George S. Witham, Jr. U. S. pat. 1,732,114, Oct. 15, 1929.—A "sounding rod" or "detector" is secured to the bed plate or to an extension thereof projecting outside the beater tub. It may consist of an ordinary bar or rod which will respond to the vibration of the machine, and to which the beaterman may apply his ear or which he may grasp with his hand in order to judge of the way in which the beater is working. The upper end of the rod may be provided with an enlarger knob or button, which may be solid or open, and in the latter case it may be provided with a rubber (or other) diaphragm across its open face. The sensitiveness and convenience of the device may be increased by the application of a stethoscope to the bar.—A. P.-C.

Jordan Engine. John A. Wiener. U. S. pat. 1,730,908, Oct. 8, 1929.—It is claimed that more efficient refining is obtained by passing the stock in a direction opposite to that generally used at the present time, i. e., by feeding the stock at the large end and discharging it at the small end. In order to cause the stock to flow against the natural flow induced by the pump-like action of the refiner, positive impelling means for the stock are provided by forming impeller blades on the larger end of the jordan plug to force the stock between the liner knives and the plug knives. Each impeller blade consists of a curved plate extending to the periphery of the case, but terminating short of the shaft to provide an opening for the admission of the stock. It is claimed that the power consumption is reduced.—A. P.-C.

Extractor for Beating Engines. Walter Werner assignor to The Noble and Wood Machine Co. U. S. pat. 1,726,873, Sept. 3, 1929.—A short distance back of, and preferably above the crest of the backfall, is a trough lying across the tub, the discharge end being lower than the opposite end and extending through or over the upper part of the tub curb. In front of the trough is a fork-like separator, which consists of a series of spaced pendent bars the free ends of which are so placed as to intercept the water and stock which is thrown over the backfall and prevent any stock which has not been reduced to the desired fineness from passing into the extractor. The backfall may be close to the roll, as usual; or it may be set some distance back of the roll, a whipping or propeller device (such as a paddle wheel) being placed between the roll and backfall to force the stock over the backfall.—A. P.-C.

Investigation Over the Relation Between the Degree of Beating, the Tearing Length and the Porosity. von Possanner. Papier-Fabrikant 27, No. 42, 645-647 (Oct. 20, 1929).—Two different pulps were used: Schopper porosity, tensile tester and Schopper-Riegler apparatus used in the testing. Results: beating degree is relative to beating time, the tearing length is relative to the degree of beating, and the porosity is indirectly proportional to the degree of beating. Or, in beating the tear-

ing length increases gradually, while the porosity drops considerably at first and then varies slower with the beating time. —J. F. O.

Crushing Action on the Stock and Paper Manufacture. Rod Mill as New Stock Equipment. W. Schmid. Zellstoff und Papier 9, No. 11, 756 (1929).—The crushing action on the fiber plays an important part in that it tends towards better formation and stronger paper. Parallel with this is the soaking action on the fiber, however, not always desired. Application of the Rod Mill in the ground wood department, in sulphite and sulphate, as well as Masonite, is fully discussed.—J. F. O.

Enclosed Beater for the Manufacture of Paper and Board, with the beater roll working in the opposite direction to standard practice. D. R. P. 480, 644. February 22, 1924.—J. F. O.

Arrangement for Setting the Beater Pressure in beaters in which the weight of the roll is equalized on both bearings through adjustable load scales by means of a movable weight along a beam. D. R. P. 483, 994, April 29, 1926. P. J. Wolff and Sohne G.m.b.H. and Hermann Mallickh, Duren, Germany. —For the purpose of equalizing the loading and unloading on both sides of the beater roll, the pressure on the shaft is regulated by means of a common hand wheel which acts simultaneous on the weights at each bearing.—J. F. O.

Beating Machine for Paper and Similar Materials. Austrian pat. 113,995. March 15, 1929. P. I. Wolff & Sohne, G.m.b.H.— The stock is conducted helically through the machine by means of a forced lead or guide arrangement built in between the grinding roll circumference and the widened housing.—J. F. O.

Process and Arrangement for the Diminishing, Beating, Fiber Separation, Mixing or Felting, of Moist or Dried Material. Finnish pat. 12,498, Aug. 9, 1927. Eduard Sterzl in Prag-Smichow.—The material is worked between the surface of a rotating drum and teeth brought in contact with this surrounding mantel.—J. F. O.

Bleaching

Effects of Bleaching Variables on the Strength Properties of Easy-Bleaching Spruce Sulphite Pulp. P. K. Baird and R. H. Doughty. Forest Products Laboratories, Madison, Wis. Paper Trade J. 90, No. 8, 175-183 (Feb. 20, 1930).—A study of the effects of bleaching variables on the strength properties of the bleached pulps, as developed by the standard testing methods. —A. P.-C.

Automatic Measuring of Bleach Liquor. Zellstoff und Papier 9, No. 11, 755 (1929).—The purpose of the apparatus manufactured by Voith is to add bleach liquor uniformly and at a certain required rate, by means of compressed air and a system of regulating valves, thus effecting a very intimate mixing.—J. F. O.

Comments on the Bleaching of Wood Pulp. Raymond S. Hatch, International Bleaching Corporation, New York. Pulp Paper Mag. Can. 28, 663-666, 698, 700 (Oct. 31, 1929); Paper Trade J. 89, No. 18, 135-139 (Oct. 31, 1929).—The complex physical and chemical structure of the cellulose fiber is briefly described. The lignin complex is discussed and its function as a protecting medium for the accompanying cellulose is described. The susceptibility of cellulose from which nearly all protecting lignin has been removed to oxidation and hydrolytic attack is pointed out. Curves are given showing the rates of exhaustion of bleach by pulp at consistencies of 3 to 15 per cent.—A. P.-C.

Production of White Paper. Emilio Aragones. Fr. pat. 662,-870.—According to this patent, the bleaching of esparto halfstuff is carried out as follows: (1) The defibered halfstuff is washed after draining. (2) The halfstuff is acidified with sulphuric or acetic acid. (3) A predetermined amount of calcium hypochlorite is allowed to act on the halfstuff for a definite length of time. (4) The halfstuff is washed thoroughly before storing or refining.—A. P.-C.

Bleaching Fiber Pulp. Horatio A. Helder assignor to The Champion Fibre Co. U. S. pat. 1,732,511, Oct. 22, 1929.—At any stage of the bleaching process prior to washing with water for the removal of bleach residues, there is added to the pulp an aqueous condensate from the evaporation and concentration of an aqueous tannin extract, which serves to facilitate the bleaching.—A. P.-C.

Apparatus for Bleaching Paper Pulp. Albert D. Merrill assignor to The International Bleaching Corporation. U. S. pat. 1,734,632, Nov. 5, 1929.—A spiral ribbon conveyor and agitator is mounted on a vertical rotary shaft within a tank and close to its inner surface, the conveyor being farther away from the shaft at the top than at the bottom. In this way the pulp near the outside of the tank is forced upwards along the wall, then towards the center, where it is forced downwards.—A. P.-C.

Bleaching Chemical Wood Pulp. Linn Bradley and Edward P. McKeefe assignors to Bradley-McKeefe Corporation. U. S. pat. 1,730,315, Oct. 1, 1929.—Pulp in a flowing condition and containing only a small quantity of cellulose material in a large quantity of water is brought into direct contact with chlorine gas and permitted to flow through an atmosphere of chlorine.— A. P.-C.

Fillers and Coating Materials

Examination of China Clay. R. G. Thin, Paper Mill 52, No. 52, 20, 24 (Dec. 28, 1929).—A discussion drawing attention to the confusion which exists as to the legitimate proportion of moisture and grit in clays and to the necessity of having a method of testing which must be adhered to in every detail. It is suggested that the personal equation in the determination of grit and mica can best be eliminated (or at least reduced to a minimum) by an elutriation test in which the rate of flow can be regulated by passing water under a constant head through a capillary tube of definite bore and length. Using an apparatus similar to the Schone ellutriator, it was found that with a velocity of 0.3 mm. per second, particles of sand and mica up to 0.44 mm. in diameter were washed over.—A. P.-C.

Casein. A. E. Regnier and Arthur C. Dreshfield, Paper Makers' Chemical Co., Kalamazoo, Mich. Paper Trade J. 89, No. 24, 66-67 (Dec. 12, 1929).—A brief outline of the properties of "solvents" for casein for coating paper, and of a few of the common difficulties encountered in the use of casein in coating. —A. P.-C.

Chemical Microscopy in the Paper Mill Laboratory. Kenneth P. Geohegan. Aetna Paper Co. Paper Mill 53, No. 8, 108-114 (Feb. 22, 1930); Paper Trade J. 90, No. 10, 67-68 (March 6, 1930).—The value of methods of chemical microscopic analysis are brought out by describing their application to the identification of fillers.—A. P.-C.

Experiments with Rosin Sizing. S. R. H. Edge. World's Paper Trade Rev. 92, 1974-1976 (Nov. 29), 2102, 2104 (Dec. 6) 2142-2146, 2180-2184 (Dec. 13, 1929); Paper Maker and Brit. Paper Trade J. 78, 595-597 (Dec. 2, 1929); 79, 38-48 (Jan. 1, 1930); Paper Mill 53, No. 1, 16, 22 (Jan. 4, 1930).—In a previous paper it was shown that when the conditions for maximum sizing were carefully adhered to, the amount of rosin used, from 0.7 per cent upwards, made little difference and that, rather than sizing being increased, it tended to fall off when more than 0.7 per cent rosin was used. With less than 0.7 per cent rosin, the following "comparative sizing" values were obtained: 0.6 per cent rosin, 60.81 comparative sizing; 0.48 per cent, 40.40; 0.36 per cent, 39.62; 0.24 per cent, 21.18; 0.12 per cent, 6.11. Sheets perfectly sized to ordinary writing were obtained in all but the last two cases, and even here the sizing effect was obvious, though feathering occurred with ink. Providing the exact conditions for maximum sizing are adhered to closely, really hard sizing can be obtained with unbeaten pulp, contrary to common belief. With 0.7 per cent rosin and addition of alum to pH 5.0, on increasing the wetness of the pulp the comparative sizing value increases till about 35 degree wetness is reached, above which the effect of increasing wetness is not obvious.— A. P.-C.

Starch in Paper Making. J. P. Strasser. Stein-Hall Manufacturing Co., Chicago. Paper Mill 53, No. 4, 5, 19-21 (Jan. 25, 1930).—A discussion of the function of starch in paper making and of the factors which must be considered in the efficient and economical use of raw and modified starches in beater and tub sizing.—A. P.-C.

Wax Sizing Compositions. Joseph Rossman. Patent Office, Washington, D. C. Paper Trade J. 89, No. 20, 59-61 (Nov. 14, 1929).—A patent review, comprising abstracts of 38 U. S. Patents issued from 1865 to 1929.—A. P.-C.

New Process for Sizing and Waterproofing Paper. Societé Générale d'Entreprises. Fr. pat. 664,935.—Bitumen, asphalt, tar, etc., is emulsified by mixing with melted rosin, and gradually adding a hot solution of caustic soda to saponify the rosin to the desired degree. A fatty acid (sulphonated if desired) may be used instead of rosin. The emulsion is used in the same way as ordinary size milk.—A. P.-C.

Technology and Wax Sizing. Bruno Wieger. Paper Maker and Brit. Paper Trade J. 78, 389 (Oct. 1, 1929).—A brief discussion of the advantages of engine-sizing by means of wax and wax compositions, with a description of the characteristics of wax-sized papers.—A. P.-C.

Process for Sizing Paper. Albert L. Clapp assignor to Bennett, Inc. U. S. pat. 1,727,003, Sept. 3, 1929.—An aqueous soap dispersion of unsaponified waterproofing material such as paraffin is incorporated, suitably with sodium resinate, into pulp prior to its formation into paper, together with a substantial quantity of sodium silicate, sufficient aluminum sulphate is added to precipitate the soap and sodium silicate, thus forming a voluminous precipitate of aluminum silicate carrying down and fixing substantially all the dispersed material on the pulp.—A. P.-C.

Process for the Preparation of Rosin Solutions. Société anonyme des Papeteries de Rhode St. Genèse. Belg. pat. 360,-612, June 29, 1929.—Rosin soap is mixed with water containing sufficient alkali, so that the final solution contains free alkali.—A. P.-C.

Paper Machine

Moisture Indicator and Control for Paper Machines. George S. Witham, Jr. U. S. pat. 1,741,266, Dec. 31, 1929.—Owing to the intimate contact of the felt and paper passing around the dryer rolls, the moisture content of the felt as it leaves the last dryer will give a reliable indication of the moisture content of the paper. An elongated box is placed in contact with the felt at a point a short distance beyond where it is separated from the paper, the side of the box facing the felt being open. Air is drawn or blown through the box and passed through a psychrometer or hydrometer which measures the humidity of the air after its contact with the felt. The instrument is provided with a suitably calibrated dial. The latter controls a compressed air supply, which in turn controls the valve mechanism of the steam supply to the dryers. If desired, a second box may be provided in contact with the paper web a short distance beyond the point where it leaves the felt, the two boxes being connected in parallel, and means are provided for automatically cutting out the second box when a break occurs in the paper.—A. P.-C.

Stock-Controlling Means for Paper Machines. John R. Spoor. U. S. pat. 1,741,347, Dec. 31, 1929.—This is a development and improvement of U. S. pat. 1,689,755, Oct. 30, 1928. The stock from the jordan is delivered into a box provided with an adjustable dam forming a supply compartment. The stock is delivered from the bottom of the supply compartment to the paper machine chest. Part of it passes through a hopper, which is mounted on a lever and balanced by a counterweight. The end of the lever operates a needle valve in the water supply line to the jordan supply chest, so that variations in the consistency of the stock from the jordan will change the weight of stock in the balance hopper, thereby operating the needle valve to adjust the amount of water to the jordan supply chest so as to keep the consistency.—A. P.-C.

New Era in the Manufacture of Paper. V. S. Denison. The Paper and Textile Machinery Co. Paper Industry 11, 1405-1406 (Nov., 1929).—A brief description of the principle of the new Millspaugh paper machine, of the commercial size experimental paper mill installed by the company in order to develop the machine and bring it to the stage of being of practical value and application, with a brief discussion of the possibilities of the machine.—A. P.-C.

New Millspaugh Paper Machine. William H. Millspaugh. The Paper and Textile Machinery Co., Sandusky, Ohio. U. S. pats. 1,715,615, June 4, 1929; 1,718,573 and 1,718,574, June 25, 1929; 1,722,503, July 30, 1929; Paper Trade J. 89, No. 25, 59-64 (Dec. 19, 1929).—These patents cover various features of the new paper machine which is on the market and which is based on novel applications of vacuum to the formation and drying of the sheet.—A. P.-C.

Rated Machine Capacities and How Compiled. C. R. Whipple. Beloit Iron Works, Beloit, Wis. Paper Trade J. 89, No. 26, 44, 46 (Dec. 26, 1929).—A discussion of the various factors involved in calculating the rated capacities of paper machines, and of the manner in which they are treated in finally arriving at the rated capacity.—A. P.-C.

Woven-Wire Belt for Paper Machines and Method of Forming the Same. Nelson W. Webb assignor to Eastwood Wire Mfg. Co., U. S. pats. 1,747,274 to 1,747,276, Feb. 18, 1930.—*No. 1,747,274*—At each end of a length of the wire cloth, a weft strand is provided having a cross section which is elongated longitudinally of the cloth. These strands are brazed to the warp wire ends, and the two ends of the cloth are secured together by a lacing wire to form a seam. *No. 1,747,275*—A weft strand at each end of the wire cloth (before sewing) is engaged with the warp wire ends and has a substantially oval cross section elongated longitudinally of the cloth. Means are provided for securing the weft strand at each end against longitudinal movement relatively to the warp-wire ends. *No. 1,747,276*—A weft strand having a substantially ribbon-shaped cross section, elongated longitudinally of the cloth, engages the warp-wire ends and is secured against longitudinal movement relatively to them. The ends of the cloth are suitably seamed.—A. P.-C.

Wire-Washing Device for Paper Machines. Alfred F. Helin assignor to The Bagley and Sewall Co. U. S. pat. 1,744,892, Jan. 28, 1930.—The nozzles or orifices in the spray pipe are made to converge transversely in the pipe.—A. P.-C.

Device for Regulating the Feeding of Stock to Paper Machines. August Kolitsch. Fr. pat. 662,575. Variations in the weight of the sheet, due to variations in the amount of fiber fed to the wire of the paper machine, result in variations in suction at the suction boxes and suction couch roll. This variation of vacuum is used to control the feed of stock to the flow box, as follows: in addition to the outlet of stock from the stock box to the flow box of the paper machine, with its manual adjustment, a second outlet is provided with a gate controlled by a pressure-operated device, which is connected by a pipe to the suction boxes or suction roll and which is adapted to open or close the gate of the second outlet as the vacuum in the boxes or roll varies.—A. P.-C.

Devices for Guiding Paper Machine Wires.—G. Haindl'sche G.m.b.H. Fr. pat. 667,951.—A nozzle is mounted to discharge a jet of water vertically downwards past the edge of the wire when the latter is in its proper position, so as to impinge on a pivoted and counterpoised target plate. When the wire is displaced and intercepts all or part of the jet, the impact on the target plate is altered, thereby changing the position of the plate, which is used to operate a suitable hydraulic device for operating the wire guide roll. The apparatus is designed so as to sway the wire continually back and forth, but it is so delicate

that the lateral displacement of the wire is too small to cause trouble, and is beneficial in preventing grooving of the suction-box covers.—A. P.-C.

Paper Making Machine. P. Erkens. Eng. pat. 320,468.—The table is provided with two groups of shake rails, the front group being subjected to a parallel shaking movement while the rear bars oscillate on pins at one end. Suction boxes are arranged between the table rolls under the wire. At the line between the two sets of shake rails, the wire is guided by upper and lower rolls and suction devices are provided at this point, mounted on the first group of rails, either alongside of the table rolls at this point or in place of them.—A. P.-C.

Fourdrinier Paper Machine. Société des Papeteries Aubry. Fr. pat. 663,651.—Two wires are provided, one travelling in the general machine direction and the other in the opposite direction, and a sheet is formed on each. The sheet formed on the reversed wire is picked up by a felt and is united to the other sheet just ahead of one of the wet presses.—A. P.-C.

Tiltable-Fourdrinier Paper Machine. Warren E. Beadle. U. S. pat. 1,738,520, Dec. 10, 1929.—The table frame is supported by pillars placed at intervals along the sides of the frame. It is pivotally connected to the pillars along one side and has cross-beams extending laterally beyond these pillars so as to be rockable about the pivots. Tracks are provided some distance above and across the wire. On the tracks run trucks carrying hanging bars which support horizontal rods across the length of the wire. After removing an old wire, the table is tilted on one set of pillars, the other set of pillars is removed, the breast roll is moved in toward the end of the table frame, the stretch roll is raised to a higher position, the new wire is suspended in normal working position on the rods supported from the overhead trucks, the latter are run across the machine to pass the wire around the tilted table, the supporting rods are removed, the removed pillars are put back in their proper positions, the table is lowered, and the breast and stretch rolls returned to their normal working positions.—A. P.-C.

Deckle for Paper Machines. John W. Vedder. U. S. pat. 1,734,929, Nov. 5, 1929.—The deckle straps, instead of extending from the apron to the first or second suction box, extend merely to the point at which the sheet has reached such a stage of formation that its edges will hold. The length of contact of the straps with the wire is thus reduced to about one-third to one-half of ordinary present-day practice. Also, instead of travelling with the wire, the straps are stationary, being anchored to the slice, and single-reach straps are used, thus reducing their weight and cost.—A. P.-C.

Flow Control for Flow Boxes of Paper Machines. E. E. Berry assignor to Beloit Iron Works. U. S. pat. 1,727,928, Sept. 10, 1929.—The walls of the flow box and the baffles are preferably inclined upwardly and forwardly toward the delivery end, providing circuitous up and down passages, the walls of which at the bottom turns are curved so as to eliminate dead corners or spaces. In the last passage before reaching the discharge outlet, the stock travels vertically downwards, which construction insures against a quiescent condition of the stock in the region contiguous to the slice. One or more rotating mixers (preferably of the form described in U. S. pat. 1,629,088, May 17, 1927) are provided in the last downward passage before the stock reaches the slice, and additional mixers may also be provided in some of the other passages. In order to prevent the formation of eddies and cross currents in the stock as it flows on to the wire, a series of thin flat plates parallel to the direction of travel of the wire are mounted in the space between the last mixer and the discharge orifice. The slice plate is equipped at its lower end with a flexible lip, preferably a strip of rubber having parallel front and back faces and a curved rear-bottom face which defines, with the top surface of the apron, a converging mouth leading to the discharge orifice. The lip body is held against the front wall of the slice plate by a series of guide plates or brackets which allow vertical adjustment of the lip upon the slice plate. The lip body is adjustably connected at spaced points throughout its length to the slice plate by a series of screw connections, preferably arranged in alternation with the guide plates. This enables extremely accurate regulation of the discharge orifice and permits setting the lip to vary the depth of the stream at different points.—A. P.-C.

Multiple-Wire Paper Machine. Paul Erkens. U. S. pat. 1,727,162, Sept. 3, 1929.—A number of units, each consisting of a fourdriner table, are combined with a main fourdriner wire on which a paper web may or may not be formed. The webs from the several units are deposited in succession on the main wire (or on the web formed thereon) so as to have a sheet built up of as many plies as there are units (including the main wire if a sheet was formed on it). The several units cooperating with the main wire are independent of one another. Suction boxes are provided below the main wire at the points where each unit delivers its web. Preferably all the units and the main wire are subjected to shaking motion in the same direction and in parallel, and the compensating shaking motion is imparted to the wire only at the rear end of the last unit.—A. P.-C.

Removable-Fourdrinier Paper Machine. Alonzo Aldrich and Earl E. Berry assignors to Beloit Iron Works. U. S. pat. 1,726,973, Sept. 3, 1929.—The table rolls, instead of being journalled directly in the beams forming the table frame, are journalled in rails which are supported by means of resilient strips (e.g., wood) bolted on the beams. The rear rail is connected by resilient strips to a suitable shaking mechanism. The table structure is pivotally supported as a unit at its breast end and supported on power-operated jacks at its couch end to permit the pitch of the wire to be varied while the machine is running. The breast roll is mounted separately from the table structure; it may be shaken independently of or together with the breast roll. Tracks are provided under the table structure, at or near its ends. The track at the couch end is considerably lower than the normal height of the table-supporting jacks; the track at the breast-roll end is at level considerably higher than the other track. During normal operation of the machine these tracks are swung parallel to the length of the machine. The side beams are provided with rollers, which rest on the tracks when the table is lowered; and the rollers at the front side of the machine are mounted on a common power-driven shaft. To change a wire, the old wire is removed, the jacks at the couch end are lowered till the table rests on the tracks (in which position the breast end is clear of its support), the table is rolled out, a new wire is strung in place, the table is rolled back and raised into operating position.—A. P.-C.

Suction Box for Paper Machines. George S. Carroll. U. S. pat. 1,732,925, Oct. 22, 1929.—The object of the invention is to provide means for cleaning the inside of the box without having to dismount it from the paper machine. Near each end, an expansible packing is provided inside the box, which can be forced into tight engagement with the inner walls and inside of the cover of the box. The packings each have a rod passing through the end of the box. In order to clean the box the packing is contracted and then passed to and fro in the box, after which it is expanded again to form the end of the suction chamber.—A. P.-C.

Pulp Feed Regulator. George E. Mayo. U. S. pat. 1,726,750, Sept. 3, 1929.—This is an improvement on U. S. pat. 1,248,972, of Dec. 4, 1927, to I. J. Witham and G. E. Mayo, which covered a device for feeding a constant quantity of fiber to a fourdrinier machine, the essential difference consisting in elimination of the use of compressed air. An air container, or air-trap, is suspended in a constant-level stuff box, so that an unchanging body of air is trapped by the pulp and compressed to an extent depending on the consistency of the pulp. The top of this container is connected by a pipe to a diaphragm chamber operating a gate, so that increase in the pressure of the trapped air (due to increase

in the consistency of the stock) reduces the amount of pulp fed to the paper machine wire, and conversely.—A.P.-C.

Method of Making Paper. Rupert B. Daniels assignor to L. L. Brown Paper Co. U. S. pat. 1,729,571, Sept. 24, 1929.—This is an improvement on U. S. pats. 1,587,699 and 1,587,700 for making paper having certain definite portions thinner than the remainder of the sheet. In the present invention this is obtained by blowing air on the stock as it reaches the fourdrinier wire. Air pipes extend over the wire from the slice to a point where the sheet is sufficiently dewatered to prevent the fibers flowing from the thicker to the thinner regions. In order to prevent the air blast from disturbing the fiber formation, a baffle plate is interposed between the air pipe and the sheet; and in order to confine the action of the air to the required areas of the sheet, curtains extend downwards from each side of each air pipe and project very slightly into the layer of pulp.—A.P.-C.

Section-Roll Shell Drilling. Harry C. Burden assignor to The Paper and Textile Machinery Co. U. S. pat. 1,741,974, Dec. 31, 1929.—The arrangement of the holes is designed to produce a perfectly uniform wearing action of the packing strips of the suction-box inside the roll, so as to prevent the formation of grooves and ridges in the packing strips and in the inner wall of the shell. This is obtained by disposing the perforations on a series of endless parallel curved lines, each making a single, complete, circumferential traverse of the shell. The lines preferably alternate, the perforations of intermediate ones being spaced slightly circumferentially relative to those of the lines immediately adjoining or either side. Each circumferential line comprises a compound of two (or a multiple of two) opposite curves of the same total length and pitch.—A.P.-C.

Wear Distributor for Suction-Roll Shells. Hiland R. Farnsworth assignor to The Paper and Textile Machinery Co. U. S. pat. 1,730,921, Oct. 8, 1929.—The essential feature of the invention consists in providing means for effecting relative longitudinal movement between the shell and the box to cause a uniform distribution of the wear and to avoid scoring. Cam surfaces carried by stationary bearings or other members adjacent one end of the shell are engaged by suitable projections carried on the end of the shell. Alternatively, oppositely-acting gear-driven eccentrics may be actuated by a star wheel actuated by the suction-roll gear. One advantage of the latter construction is that the gears and star wheel may be so proportioned and arranged as to cause either a single, or several reciprocations per revolution of the roll shell. The device for causing reciprocation is most conveniently disposed at one end only. The amplitude of the relative motion between the shell and box need be equal to only half the distance between the centers of adjacent perforation in the same longitudinal row.—A.P.-C.

Deckling Mechanism for Paper Making Machines. Emil A. Peterson and Carl E. Everson assignors to Valley Iron Works Co. U. S. pat. 1,712,632, May 14, 1929.—The deckle pulley is mounted on an arm which is attached to a relatively stationary part of the machine so as to be adjustable both vertically and horizontally. The deckle pulley is attached to the arm in such a manner that it can be adjusted axially either inwardly or outwardly.—A.P.-C.

Wire Cleaning Device for Paper Making Machines. C. Hector Dupuis. U. S. pat. 1,719,969, July 9, 1929.—A nozzle for distributing a cleansing fluid at the surface of the wire is mounted on a rail extending across the width of the lower reach of the wire and travels back and forth through means driven from the couch roll. Directly under the nozzle is a suction box, also mounted on a tranversely-extending rail, and travelling so as to remain directly under the nozzle. The rails carrying the nozzle and vacuum box are mounted on guides so that their height may be adjusted as required.—A.P.-C.

Shower Pipe for Paper Machines. Claude L. Spafford assignor to Improved Paper Machinery Co. U. S. pat. 1,721,477, July 16, 1929.—Within the shower pipe is a clearing device consisting of a shaft mounted to turn within the pipe and having a number of sections coupled by a key and socket connection. Scraper blades are secured to the sections and engage the inner walls of the pipe, their lengths being such that they are coextensive with the space occupied by the openings in the shower pipe. The shaft sections are also provided with separated bearing projections extending in the opposite direction from the scraper blades. A crank handle is provided to turn the shaft.—A.P.-C.

Method and Apparatus for Preventing "Breaks" in Paper on the Machine. Alvin W. Smith. U. S. pat. 1,725,108, Aug. 20, 1929.—In order to arrest the progress of a tear in the web and restore the operating conditions to normal, two fluid jet nozzles are fixed close to the web (preferably near the couch roll), one near each edge. When a tear starts at one edge of the sheeet, the closing of an electric circuit automatically turns on the jets. The one near the edge where the tear started is turned off manually, and another jet near the opposite edge is moved across the sheet to cut it, leaving a lead-strip to carry the sheet through the machines.—A.P.-C.

Suction Apparatus for Paper Machines. Soc. Invenzioni Brevetti Anon. Torino. Eng. pat. 315,393.—A suction box comprising a flat frame formed of narrow bands and having lateral conduits forming a hydraulic seal, has provided within the box roller surfaces formed of tubes in the ends of which are fixed headers keyed on shafts provided with gears by which they are driven, and mounted in sleeves which, with stuffing boxes, form hermetic joints. The rollers are driven at the same speed as the wire carrying the sheet.—A.P.-C.

Paper Machine Suction Device. M. Wenzel. Eng. pat. 315,156.—Suction is produced by a multi-stage centrifugal blower, each box being separately connected to one stage of the blower, so that the vacuum is progressively increased from the first to the last box.—A.P.-C.

Device for Cleaning and Washing Paper and Board Machine Wires. V. Antoine. Belg. pat. 360,862, June 29, 1929. The apparatus consists of a carriage which is mounted so that it can travel across the full width of the wire, and which is connected to a supply pipe of the fluid used for cleaning the wire.—A.P.-C.

Slice for Paper Making Machines. Phillip J. Lamoureux. U. S. pat. 1,726,440, Aug. 27, 1929.—The slice consists of a vertical plate extending across the width and near the bottom of the blow box, which can be adjusted vertically. Attached to the lower edge of the plate is the slice-lip, which extends down and forward. Adjusting means for the lip-plate are provided at intervals across its width.—A.P.-C.

Fourdrinier Paper Machine. Melvin R. Ware. U. S. pat. 1,737,781, Dec. 3, 1929.—The wire, instead of being driven by the couch roll, is driven by a roll of approximately the same size placed lower than and in front of the couch. An upper couch is used, which is placed between the lower couch and the driving roll in such a manner as to press the wire and sheet upon the driving roll. A pressing roll is also provided on the under side of the wire between the lower couch and driving rolls to press the wire and sheet against the upper couch.—A.P.-C.

Pump for Producing Vacuum in Paper Machine Suction Boxes or Suction Rolls. Siemens-Schuckertwerke Aktiengesellschaft. Fr. pat. 669,405, Feb. 19, 1929.—The pipe from the suction box or suction roll is connected to a closed tank, in which the air and water separate. The air is removed by means of a rotary pump connected to the top of the tank, and the water by means of a water-ring pump connected to the bottom of the tank.—A.P.-C.

Method of Apparatus for Feeding Stock to Paper Machines Run at Low Speeds. J. M. Voith & Co. Fr. pat. 669,712, Feb. 15, 1929.—A perforated roll is mounted across the flow box, near the apron, at such a height that it is always completely submerged. Above and ahead of this roll are vertical plates or "froth dams" which, when the level of the stock is above the

top or roll, force all the stock to pass through the roll to agitate it, ensure uniform distribution across the full width of the wire, and remove any entrained air.—A.P.-C.

Method and Apparatus for Making Fiber Board. James J. Hinde assignor to The Hinde Products Co. U. S. pat. 1,730,-849, Oct. 8, 1929.—An endless belt or wire passes around a forming cylinder which rotates in a pulp vat. Different stocks are fed to the vat at different points, adjustable partitions being provided at suitable points to prevent mixing of the different stocks in the vat. In this way, a sheet built of different layers is made on a single-cylinder machine. On leaving the vat the wire is passed over a table above which travels another endless wire, and the sheet is gradually pressed between the two wires to remove excess water. Instead of using a forming cylinder and vat, the wire may be supported on a number of rolls to pass directly below a series of pipes or chutes which discharge the different pulps in masses or layers as the wire passes under them.—A.P.-C.

Miscellaneous

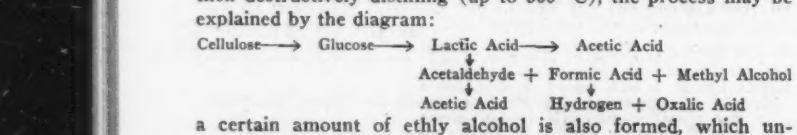
Cellulose Fiber Length. G. K. Bergman and A. Backman. Papierfabr. 27, 449-456 (1929).—The fiber length of unbleached commercial sulphite and sulphate pulps have been determined, using the conceptions "average fiber piece length" and "equilibrium mean length." The significance and measurement of these quantitis and changes produced in them by mincing, bleaching, etc., of the wood pulp are discussed.—C.J.W.

Automatic Control of Moisture Content In Pulp. Anon. Paper-Journalen 17, 137-41 (1929).—A device is described for continuous automatic recording of moisture content of pulp as it comes from the drier. It is based on the electrical conductivity method but instead of the customary skids of flat plate contacts, which often are in error due to surface moisture, a spiked wheel perforates the web this indicating the moisture content within the sheet rather than on the surface.—C.E.P.

Process for the Carbonization of Organic Matters in the Sulphite Waste Liquors. Swedish patent 67,757 March 10, 1927. C. G. Schwalbe, Eberswalde.—The waste liquor is decomposed with a quantity of sulphuric acid almost equivalent to the quantity of organic substances bound with calcium oxide, and after the removal of the calcium sludge, the liquor is heated to 180 degrees centigrade whereby the greater part of the organic substances are precipitated out in the form of easy filtering carbon.—J. F. O.

Non-Deliquescent Product from Sulphite Waste Liquor. Paul Onnehertz, Hans Wesche and Karl Brodersen assignors to I. G. Farbenindustrie Aktiengesellschaft. U. S. pat. 1,731,433, Oct. 15, 1929.—A non-deliquescent product (suitable for redissolving in water for various uses) is obtained by adding an alkali metal dichromate to the liquor and evaporating to dryness.—A.P.-C.

Decomposition of Cellulose by Treatment with Alkalies at High Temperature. Emil Heuser, Canadian International Paper Co., Hawkesbury, Ont. Paper Tr. J. 89, No. 26, 67-69 (Dec. 26, 1929); Pulp Paper Mag. Can. 29, 75-76, 86-90 (Jan. 16, 1930). In an effort to ascertain the chemism of the Rinman process of soda black liquor recovery, cellulose was subjected to conditions similar to those of the Rinman process (the general plan of study comprised similar investigations on lignin, pentosans and hexosans, but had to be discontinued). On dissolving cellulose in caustic soda solution, adding lime, concentrating and then destructively distilling (up to 300° C), the process may be explained by the diagram:



a certain amount of ethly alcohol is also formed, which undoubtedly originates from the lactic acid according to: $CH_3CH(OH)CO_2Na + NaOH = CH_3CH_2OH + Na_2CO_3$. The distillation period from 300° to 440° C. yields chiefly acetone, the amount depending mainly on the nature and amount of alkali added to the liquor before evaporation, lime salts giving a very much higher yield than the corresponding sodium salts. The acetone is derived chiefly from the acetates and to some extent from the lactates. At higher temperatures (to 500° C) production of acetone continues, but the yield of oils increases through condensation of the acetone which can not all be removed from the retort before it has condensed to oils. Above 500° C. the yields of all products, and also of gas, decrease until at about 600° C. the process is finished.—A.P.-C.

Purifying Wood Cellulose. Papeteries Navarre. Fr. pat. 663,012, Feb. 15, 1928. Wood cellulose is purified by an energetic oxidation, then after washing with water, by leaching with alkali; the cellulose thus treated has after elimination of mineral salts, a content in alpha-cellulose of 94 to 95 per cent. Details of operation are given.—A.P.-C.

Removing Caustic-Soda-Soluble Substances from Cellulose-Containing Materials. Harry P. Bassett. U. S. pat. 1,733,393, Oct. 29, 1929. The material is treated with a caustic soda solution of mercerizing strength, allowed to stand for one to four days, excess caustic soda is removed, the material is then diluted with water and is boiled with the water and residual caustic soda present to remove soluble substances and obtain a product suitable for use in rayon manufacture.—A.P.-C.

Mercerization Test. T. C. Bentzen. Whiting Plover Paper Co., Stevens Point, Wis., Paper Tr. J. 90, No. 8, 153 (Feb. 20, 1930). Paper Mill 53, No. 8, 78-80 (Feb. 22, 1930). The following procedure is recommended for the determination of alpha-cellulose: air-dry the material to constant weight at 65 per cent relative humidity and 70°F., weigh 3.5 g. of pulp (grated with a Schroeter potato grater, No. 100) into a 300 cc. pyrex beaker, add 47 cc. of 27 per cent caustic soda solution previously diluted with 25 cc. of water (giving a 17 per cent solution), stir carefully so as to mix the pulp and solution as quickly as possible, let stand 1 hr. at 70° F., dilute with 200 cc. of water, filter under suction through a tared linen filter, wash with water till free from alkali, treat on the filter with 4 per cent acetic acid, wash repeatedly with hot and then with cold water, and air dry to constant weight.—A.P.-C.

Chemistry of Lignin. III. The Destructive Distillation of Lignin from Corn Cobs. Max Phillips. Bureau of Chemistry and Soils, Department of Agriculture, Washington, D. C. J. Amer. Chem. Soc. 51, 2420-2426 (Aug. 1929). Lignin prepared from corn cobs by the alkali method, the fuming hydrochloric acid method of Willstatter and by the 72 per cent sulphuric acid method, was subjected to destructive distillation under ordinary atmospheric pressure and at a temperature of 380° to 400° C. From the alkali lignin the following results, representing the average of four experiments (calculated on the basis of ash free, dry lignin) were obtained: aqueous distillate 15.5 per cent, water-insoluble oily distillate 17.7 per cent, carbon residue (calculated on the quantity of ligning used) 52.2 per cent; gas (by difference) 13.5 per cent, acetone 0.13 per cent, methanol, 1.9 per cent, water-soluble acids (calculated as acetic acid) 0.05 per cent. The oily distillate analyzed as follows: (results are expressed as per cent by weight of the oil) acids 8.6 per cent, phenols (fraction soluble in 5 per cent caustic potash and insoluble in 5 per cent sodium bicarbonate solution) 84.0 per cent, hydrocarbons and neutral compounds 7.2 per cent. In the phenolic portion of the oil, guaiacol and eugenol were identified. In the case of the Willstatter lignin and the lignin prepared by the 72 per cent sulphuric acid method, the percentage of laqueous distillate was about the same as that obtained from alkali lignin, whereas the oil distillate was only about one-half. The percentages of carbon residue obtained from the Willstatter lignin and from the 72 per cent sulphuric acid lignin were considerably greater than that obtained from alkali lignin. The percentage of acetone and acetic acid obtained were considerably greater in the case of the Willstatter and the 72 per cent sulphuric acid lignin than in the alkali lignin, whereas the percentage of methanol was less.—A.P.-C.

Section of the

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Controlling Management Unit Costs*

(In Line with Changing Volume)

By E. L. Lalumier[1]

This subject involves a consideration of three major topics:

1—Definition of "management overhead."

2—Kinds of "changes in volume" which will be considered.

3—Relation of accounting to control of management overhead.

1—Definition of "Management Overhead"

This includes the cost of the following

1—Major executives and their staffs.

2—Service divisions such as

- Law
- Accounting and Auditing
- Research
- Budget
- Personnel and Training
- Engineering and Architects
- Consulting Services—engineering, research, legal.

3—Institutional advertising.

4—Development expense.

5—Department executives and staffs.

6—Foreman and other supervisory expense.

7—Other general expenses.

We have not considered that management overhead includes such items as depreciation, interest, insurance taxes, etc.

Some of these management expenses, those incurred for research, budgets, personnel and training, and consulting services, etc., are of comparatively recent origin. The services secured from these expenses are difficult to appraise, both because they are relatively new and because they are of an intangible nature. We have therefore the problem of developing standards for their measurement and we should regard these with a critical eye to be sure they do not increase to a point where they will be out of balance with the volume of business. Expenses which may be appropriate for one company may be very unprofitable for another.

11—Kinds of Changes in Volume Which Will be Considered

Changes in volume may result from the following: 1—seasonal changes; 2—cyclical changes; 3—long time business treand; 4—fortuitous circumstances.

Seasonal Changes in Volume

By seasonal movement, I mean the month to month changes within a given year. Seasonal changes in volume are of varying importance in different industries. Some are highly regular and violent, and others not so marked. It is a comparatively simple matter to measure the seasonal movement in most industries.

Progress has been made in some industries changing buying habits and influencing consumer demand toward elimination of seasonal fluctuations. Other companies smooth the line of their volume by bringing out new products which will be in large demand during their dull season. This is not a new idea, of course. The coal men went into the ice business in the summer; we are only carrying out in bigger business some of the ideas that have come down to us from a long time.

One of the seasonal changes I want to mention is a change that recently took place in some of our operations. Armour and Company have a great many. One of them is the cotton oil business where we buy the seed from the farmer, crush the oil out and refine it to make shortening. We had a problem of operating only such a short time as three or four months. When we made our budget and distributed it for the year over that product, we found the volume of the mill had to be so great that it entailed a great deal of expense. We were able, by putting our research department to work on the question of seed storage, to develop a way of carrying that seed through slight refrigeration so that we are now running about nine to ten months instead of four or five; that is one case where seasonal fluctuation was ironed out a bit.

Cyclical Changes

By cyclical changes are meant the changes in the total volume of business done, which are really the changes in effective demand or available raw material. In the last decade cyclical changes have received more attention that at any previous time. Great effort is being made to reduce the cyclical changes in business and a great deal of study has been given to their causes. The periods of peaks and valleys are of varying duration; there are so many contributing causes that we have not yet been able to develop a satisfactory method of forecasting their occurrence; but we do know they continue to occur.

Long Time Trend

By the long time trend is meant the average yearly growth or decline over a period of years. The attitude of the management toward management overhead expense will be influenced by the rate of yearly growth or decline. In the case of declining volume exceeding care must be exercised to control such expenses as those under discussion. Changes in volume because of long time trend would not ordinarily call for flexibility in accounting practice.

Fortuitous Circumstances

By fortuitous changes is meant any changes in volume from any causes not included in seasonal, cyclical, and long time changes. Such changes might be caused by change in fashions;

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[1] Vice-Pres., Armour & Co.

inventories; weather involving crop failures; and changes in the law. Such changes cannot usually be forecast and changes in accounting procedure cannot be made until after the event.

III—Relation of Accounting to Control of Management Overhead

As the volume of business changes the unit cost of management overhead usually changes, for ordinarily the total of the management overhead does not automatically change in the same ratio as the volume of business. The management is constantly confronted therefore with a changing unit cost of management expense. It must decide the maximum cost the business can wisely permit and how it can be kept at least to this amount.

In addition to controlling the amount of these expenses, it is necessary to distribute them:

A—So as to show responsibility for them.

B—As between periods of time.

It is the function of accounting to record these expenses so that these two objectives may be attained.

In the writer's opinion the distribution of these expenses by responsibilities is by far the most important function of accounting, though it is to the second problem, the distribution of expenses as between periods of time, that accountants have given the most thought. The management should first see the total amount of such expense and a comparison of these expenses with past periods, so that it can ascertain whether the total of these expenses is increasing or decreasing.

It has been my experience that it is often more effective if the management first sees these expenses as a total rather than to see them distributed by responsibilities. The total figure is often more impressive than the separate items. At the same time the management should see a comparison of the total with the volume of business so that it may see the trend of the unit management cost. In many cases a careful consideration of this kind of information will lead the management to a conclusion that action must be taken with reference to such expenses.

The management should next be interested in seeking a distribution of these expenses by units of responsibility so that it may know what executive or what department is responsible for these expenses; after all, control can be exercised only through individual members of the organization. In making this distribution of the expenses the objective should always be to show the expense classified according to who is responsible for making the decision concerning whether or not the expense will be made. In order to do this properly it is necessary that a satisfactory organization be established and definite responsibilities fixed so it can easily be ascertained who is responsible for each item of such expense. The cost accountant who is interested in distributing expense to products so as to obtain unit cost, is sometimes led astray from showing expenses by units of responsibility.

Research Department

To illustrate what is meant—a centralized department may perform services for a number of departments.

The first interest of the management should be to see the total amount of the cost of the research and the trend of this cost period by period, and the relation of this cost to the varying volume of business and varying volume of profits. It is presumed that the head of the research department in cooperation with the chief executive decides the amount of this expense, so all of this expense should be shown as one item for which the head of this department is responsible. This total amount may then be allocated to the departments which are benefited by the research work; this not only serves the purpose of distributing this expense to the proper departments, but also puts some responsibility upon the departments themselves; for if they are charged with part of the cost of this service, it causes them to give more serious consideration to the question of the extent to which they should use the service and whether they are obtaining value received.

In this connection, I heard of a man recently who had organized his research department in such a way that he had put it into a separate corporation. The vice-president in charge of research was president of this corporation. He charged all expenses to the corporation and gave it the profits from all the research work they were doing. After it was fully developed, the research department would turn over a job to the operating or selling departments on a royalty basis. This man was rather proud of his job because at the end of the year his research department had made more money than any other department of the business. This is only another way of finding out what the research department is doing; by proper accounting this can be done.

Distribution of Expense

The method to be used in distribution is sometimes difficult to determine and probably no two accountants will fully agree concerning the proper one. It has been my experience that each company thinks it has the best method of distributing expenses and that in most cases not much is gained from arguments with reference to this question. In my opinion the preliminary test should be the benefit which the department has obtained from the expense or the extent to which the department is responsible for the amount of the expense. For example, the sales department may use the research department very extensively, while the production department may use its services very little. In this case the objective of the distribution would be to charge the sales department for the expense which has been incurred in its behalf, insofar as this can be ascertained.

All accountants realize of course, that some expenses must be distributed in an arbitrary way. Finally it is necessary for the accountant to consider whether all expenses of any particular period should be charged to the operations of that period or whether they should be distributed over the operations of several periods. This question becomes important in companies of violent fluctuations in the volume of business. It is my opinion that there is a difference between the distribution of expenses as between long periods of time. For example, as between two fiscal years and the distribution of expenses as between short periods of time, month by month. Generally speaking, it is my opinion that it is wiser to let each year be responsible for the expenses of that year and it is not wise to defer expenses from one year to the next because of changes in volume between the years or even because of important increases in expense in any particular year. I have always taken the stand that expenses of the year should be pretty well taken up in the year unless, of course, it be some extraordinary thing. If all expenses are not taken up, it means when the balance sheet is made, if they are not charged off, they have to be carried along as deferred assets; I am never in favor of doing that.

If the operations of each year are charged with all of the expenses of that year, the management is more likely to take action to reduce these expenses if the ratio is undesirable, than if some of these expenses are deferred by the use, for example, of a standard or normal expense ratio. My opinion is based on the general assumption that the accountant should present expenses to the management in the way in which the most effective action toward their reduction may be obtained.

Budgeted Ratios

With reference to the distribution of expenses between monthly periods such as are the result of seasonal changes—there is considerable merit in the argument that a standard ratio for the year be established and the expenses be charged on this basis. If all the operations of the company are properly budgeted it is not difficult to arrive at a budgeted ratio of expenses to volume for the entire year. If this ratio is then applied to the volume of each period it will provide for a uniform percentage charge against the volume of each period. The only danger in this method is that the expenses usually do not fall much below the

budgeted figure while the volume of operations may do so. It is necessary, therefore, for the accountant to give careful consideration to any material decrease of the budgeted volume so that adjustments can be made in the monthly ratio used, if necessary.

Payroll Basis of Distributing

Another possible method of distributing management overhead is on the basis which will result in charging the total of each month's expense to the operations of that period, regardless of increasing or decreasing volume. This will not give a uniform unit management cost throughout the year but will result in the unit management cost varying inversely to the seasonal fluctuations of the business. The merits of this method are that the expenses are all charged during the month when incurred, and it may act as a spur to the management to try to smooth out the seasonal fluctuations so as to correct this condition.

If the seasonal fluctuations are marked and the yearly sales and management expenses can be estimated accurately, probably the first method is preferable.

Long Trend Changes

In the case of long trend changes, the chief problem is to anticipate what the trend in volume will be and to see that the trend in the expenses are in harmony with this trend. All of our experience tells us that expenses are often not reduced as the volume goes down, and that often the expenses increase faster than the volume increases. This, however, is not so much a matter of distribution as between periods as it is a matter of exercising proper control over total expenses.

In the case of fluctuations due to fortuitous circumstances, about all the accountant can do is to see that the effect of this condition upon the unit management cost is brought to the attention of the management quickly so that action may be taken to change the management expense if circumstances are such that it is necessary.

Figures Should Be Given Early

Let me say here (possibly the certified public accountant will not agree with me) I have always thought that an accounting method should be used that will give the figures to the management at the earliest possible date. Figures given to the management quickly will do more good, even though they are not absolutely accurate to the last dollar, than if they are given accurately but held off for a long time.

The various problems which I have touched upon in this discussion are of such importance and involve so many different variable factors that a complete discussion would lead us far beyond the space I have at my disposal. I have only attempted here to state a few general propositions which I trust will serve as a challenge to your thought upon these important problems.

Common-Sense Accounting

I have always taken the stand that accounting is simply common sense. The accountant's job is to paint the picture of the things that have happened and from that draw his picture of the future; and in drawing that picture of the past and of the future, to draw it in such a way that there will not be so much detail that the management will not be interested in seeing just what is there.

Enviable Ability

When I read a paper such as Mr. La Rose's, I rather envy some men for their ability to figure their costs. In the packing business it is rather a hard thing. In fact, any costs figured must be arbitrary. We have a breaking down proposition, rather than one of building up. Then, too, we have no control over our raw material. The farmer who raises the livestock sends it to the market whenever he sees fit. If he is planning on shipping a load of hogs to market and it happens to rain, he will wait another week, so that our volume of raw material fluctuates to a great extent. It also runs in cycles, but those we can forecast. Through our buyers throughout the country—and we have been doing some buying in the country—we are able to tell fairly well what the amount of livestock coming to market will be; but to forecast that within a short radius is difficult. We have put in budgets in Armor and Company. We were told when we started that it was impossible that the packing business was different from any other business. We now have budgets entirely throughout our business, it is really remarkable how close we can come over a period of a year; of course, in the packing business, you know, we consider we must have 12 months to complete the cycle.

Emergency Employment

The various paper trades are to be included in the organization of the Emergency Employment Committee, which is pushing a campaign to raise $6,000,000 for unemployment relief in New York, it was announced November 7. Seward Prosser, chairman of the board of the Bankers Trust Company and chairman of the Committee, stated that Hugh J. Chrisholm, president of the Oxford Paper Company, has consented to serve as chairman of the paper group.

Two million days employment, at wages of $3 a day, for unemployed heads of families in New York during the winter months constitutes the Committee's relief program. Wages will be disbursed by the principal family welfare agencies in the five boroughs for work that would not otherwise be undertaken this winter.

Funds will be sought from individuals, from corporations, and in smaller gifts from employees who will authorize the treasurers of their companies to deduct a certain amount, approximately one-half a day's salary a month, from their pay.

Initial efforts in quiet solicitation of large gifts have encouraged the committee to proceed with immediate placing of jobless men and women at work in city parks and other non-profit-making institutions. Approximately 3,000 men and women have been assigned to jobs paying sufficient funds to allow them to maintain their families and to regain their independence.

The Emergency Employment Committee was organized this autumn when it became evident that conditions caused by unemployment were such that the burden upon the ordinary relief organizations would be greater than their normal budgets could bear. The original plan of the Committee was to raise by public subscription at least $150,000 a week to be equally divided between two agencies for the provision of jobs in the parks and non-profit making institutions for the unemployed of Manhattan and the Bronx. As the result of conferences with representatives of all the important relief agencies of the city, however, the original plan has been greatly enlarged. The present plan brings together relief agencies representing all races and creeds and the objective is to provide jobs, as far as possible, for the unemployed in all five boroughs of New York.

The following agencies are now working with the Committee: Manhattan and the Bronx, Catholic Charities of the Archdiocese of New York, Charity Organization Society, Jewish Social Service Association, The New York Association for Improving the Condition of the Poor; Brooklyn, Brooklyn Bureau of Charities, Catholic Charities of the Diocese of Brooklyn, the Brooklyn Association for Improving the Condition of the Poor, United Jewish Aid Societies of Brooklyn; Queens, Family Welfare Society of Queens, Richmond, Staten Island Social Service.

Seward Prosser, chairman of the Committee, has announced that pledges of gifts have already been received which insure the first $1,000,000 for the work of the committee. The need, however, is expected to increase rapidly and it is not likely that it will reach its peak until mid-winter.

The city-wide canvass for funds to provide 2,000,000 days of employment at $3 a day will begin on November 17.

New TAPPI Members

N. J. Larsen, service engineer, Albany Felt Company, Albany, N. Y. is an American but was a papermaker for several years in Norway. In 1917 he came to America where he was employed by the Eastern Manufacturing Company at South Brewer, Maine, following which he went with the American Writing Paper Company, where he was assistant superintendent and assistant manager for several years. He is a graduate of Hoitens Technical School, Norway.

G. K. Hill, director of laboratory, Gilbert Paper Company, Menasha, Wis., is also chairman of the Lake States Section of TAPPI and attended the University of Wisconsin.

G. F. Hrubecky, chemical engineer, John Strange Paper Company, Menasha, Wis., has been with the Menasha Printing and Carton Company, Peshtigo Pulp and Paper Company, Thilmany Pulp and Paper Company, before going with the John Strange Paper Company. He is secretary of the TAPPI Lakes Section and is a graduate of the University of Wisconsin.

F. E. Prior, chemist, Carlyle Paper Company, Carlyle, Ill. For the past five years, since receiving his degree in chemical engineering from Ohio State University Mr. Prior has been with the Carlyle Paper Company.

E. R. Laughlin, a student at the Institute of Paper Chemistry, Appleton, Wis., is a Junior member of TAPPI, having been graduated in June of this year from the Ohio Wesleyan University.

E. L. Foreman, is a Junior member of TAPPI who is attending the Institute of Paper Chemistry at Appleton, Wis. Mr. Foreman has worked for the Masonite Corporation at Laurel for the past two summers as research chemist and is a graduate of the University of Illinois with a degree in chemistry.

K. T. Hasselstrom is at present doing special research work at Columbia University in New York and is quite well known both here and abroad for his work in the field of organic chemistry. In 1922 he was assistant professor at the Technical Institute in Finland and remained there for several years.

D. M. Parkin is chemist for the Donside Paper Company, Ltd., Woodside Aberdeen, Scotland. He attended the Barnsley Technical College in Yorkshire, England and Sheffield University.

Bjarne Johnsen to Represent TAPPI

Dr. Bjarne Johnsen, director of the laboratories of the Hammermill Paper Company, Erie, Pa., recently sailed for Norway where he will remain for a few months.

During his visit to Europe Dr. Johnsen will be the official delegate of the Technical Association of the Pulp and Paper Industry at the Twenty-fifth Anniversary Meeting of the Verein Der Zellstoff-und Papier-Chemiker und-Ingenieure which will meet at the Engineers Club in Berlin, Germany on December 4-6, 1930.

The papers to be presented have the following titles, "Bleaching of Pulp" by Dr. H. Wenzl, "Developments in Paper Machine Construction" by H. Wintermeyer, "The Drying of Paper" and "Mill Process Water".

New Fluid Meter Bulletin

"Mechanically Operated Fluid Meters" is the title of a new bulletin now being distributed by the Bailey Meter Company of Cleveland, Ohio.

This bulletin which is designated as No. 37 describes and illustrates various types of mechanically operated meters and auxiliary equipment for their installation. Colored meter chart records showing results obtained by the application of Bailey meters to various processes are included, together with sections on orifice and flow nozzle location, calibration, pulsating flow, special conditions and special applications.

This 52 page bulletin also includes a long list of users of mechanically operated Fluid Meters showing installation data for various services and fluids.

TAPPI Notes

Sigge Ekman for the past five years in charge of control and development work in the manufacture of kraft pulp and paper, has gone with the Rhinelander Paper Company of Rhinelander, Wis., as chief chemist.

C. H. Champion formerly of Price & Pierce Ltd. is now in charge of clay sales for the R. T. Vanderbilt Company of New York City.

M. C. Tengler formerly engineer for the Hammermill Paper Company at Erie, Pennsylvania, is now director of W. Hamburger, Papier-Zellulose und Pappenfabriken at Pitten, E. W. A. Austria.

R. M. Radsch is now with the Appleton Machine Company of Appleton, Wisconsin, after having been with Thilmany Pulp and Paper Company at Kaukauna, Wisconsin, for some time.

P. P. Hilton, who was with Johns-Manville for several years, first as superintendent and then as sales engineer, is now mechanical superintendent of the Scott Paper Company of Chester, Pennsylvania.

Nils Sandman who was working temporarily at Backus Brooks Company, International Falls, Minnesota, is now with the Insulite Company of Finland, O. Y. Karhula, Finland.

New Zealand Issues Pulp Bulletin

The New Zealand State Forest Service has recently issued its Bulletin No. 6 entitled "Pulping and Papermaking Properties of New Zealand Woods." The data for the bulletin was obtained from work done at the Forest Products laboratory at Madison, Wis., by C. E. Curran, P. K. Baird, E. R. Schafer, W. H. Monsson and G. H. Chidester of the laboratory together with A. R. Entrican, engineer in forest products for the New Zealand Forest Service.

Brotherhood May Meet in Toronto

ALBANY, N. Y., November 10, 1930—There is considerable speculation going on relative to the meeting place for the next convention of the International Brotherhood of Papermakers and from all indications it appears now that the city of Toronto will be selected. The organization is in receipt of invitations to hold the convention in that city and as many of the paper mill unions in the Middle West favor that place it appears certain that it will be picked. Among the other Canadian cities bidding for the gathering is Ottawa which is also desirable to certain factions in the organization. The last convention was held in Montreal where several hundred delegates from this country and Canada assembled. The next convention is slated to be held in March and the executive board of the International body will select the meeting place. Each local is given the opportunity to send one delegate to the gathering.

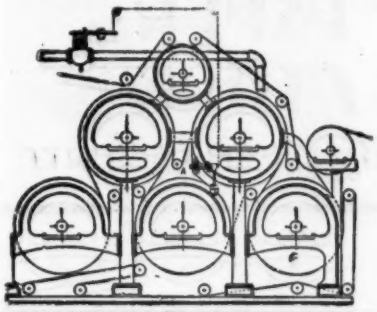
It was also learned that Arthur Huggins, secretary, has just returned from an extensive trip through paper mill towns in the South where he made a study of business conditions. The trip consumed about two weeks and it was said that he was favorably impressed with the general run of conditions.

Fair Paper Demand in Boston

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 10, 1930.—The wholesale paper business in Boston has been at least fair as a whole. Statements of merchants vary as to the volume of their respective orders, but there seems to be more activity in fine paper, with a steady improvement. Wrapping paper lines are in moderate demand. The box board situation is practically unchanged, with price conditions unsatisfactory. Paper stock is "dull, if not duller," according to a statement at a prominent house in the trade. During the last week, however, there have been few price changes. Twine merchants say that the drop in prices of hard fiber lines makes the situation unsettled.

The Pickles Drying Regulator



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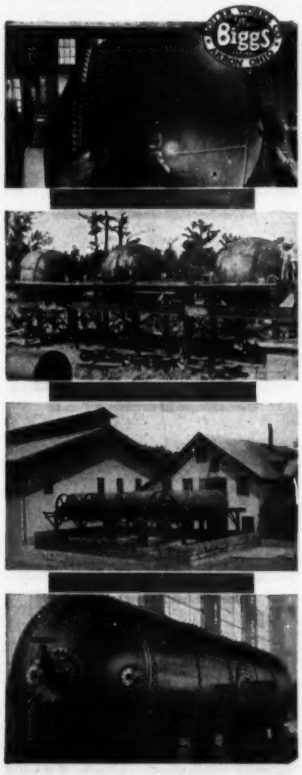
YOU'LL MAKE NO MISTAKE IN ACCEPTING IT

Pickles Drying Regulator

will do everything we claim for it and more. The test costs you nothing until you are satisfied. Many mills tried one and now have every machine equipped. Write for list of users and other information.

W. F. PICKLES **Buckland, Conn.**



Top—Biggs Welded Rotary Digester. Second—Biggs Riveted Rotary Digesters. Third—Biggs Standard Cylinder Rotary Bleaching Boilers. Bottom — Biggs Tumbling Digester.

Biggs Builds

Welded Globe Rotary Digesters
Riveted Globe Rotary Digesters
Cylinder Rotary Bleaching Boilers
Tumbling Digesters, Welded or Riveted
Stationary Vertical Digesters, Welded or Riveted
Penstocks
Pipe Lines, Welded or Riveted
Welded or Riveted Steel Plate Construction of Every Description.

Write for our folder, "Unusual Steel Plate Construction"

The Biggs Boiler Works Company
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Akron, Ohio
New York Detroit Chicago

Glens Falls Rolling Action Flat Screen

CONSTANT EFFICIENCY, HIGH SCREENING CAPACITY AND CLEANER STOCK

Troubles eliminated	*Advantages given*
Toe Blocks	Constant High Capacity
Pound and Clatter	Smooth, Quiet Operation
Diaphragm Distortion	Freedom from Repairs and Adjustments
Variable Capacity	Low Power Consumption

Ask for descriptive bulletin

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Hydraulic Presses and Pumps

Successors to the Granger Foundry & Machine Co.

The Textile-Finishing Machinery Company

PROVIDENCE, R. I.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING NOVEMBER 8, 1930

SUMMARY

Cigarette paper	2,406 cs.
Wall paper	98 bls., 1 pk., 21 cs.
Paper hangings	26 bls., 7 cs.
News print	5,376 rolls.
Printing paper	10 rolls, 141 cs.
Wrapping paper	305 bls., 24 cs.
Packing paper	61 cs.
Blue print paper	6 cs.
Colored paper	37 cs.
Filter paper	61 cs.
Drawing paper	38 cs.
Basic paper	28 cs.
Raw base paper	20 cs.
Baryta	177 cs.
Surface coated paper	2 cs.
Coated paper	13 cs.
Metal coated paper	301 cs.
Photo paper	5 cs.
Writing paper	6 cs.
Decalcamania paper	37 cs.
Parchment paper	27 cs.
Envelopes	5 cs.
Note paper	1 cs.
Gummed paper	2 cs.
Stencil paper	1 cs.
Miscellaneous paper	69 cs.

CIGARETTE PAPER

De Manduit Paper Corp., Liberty, St. Nazaire 1230 cs.
American Tobacco Co., Liberty, Bordeau 600 cs.
De Manduit Paper Corp., Collamer, Havre, 576 cs.

WALL PAPER

S. Stern Stiner Co., St. Louis, Hamburg, 1 ble.
G. J. Hunken, Columbus, Bremen, 1 ble.
Chase National Bank, Columbus, Bremen, 1 ble.
Globe Shipping Co., Hamburg, Hamburg, 2 cs.
Guaranty Trust Co., Hamburg, Hamburg, 9 cs.
Kensington Wallpaper Co., Hamburg, Hamburg, 1 cs., 1 ble.
J. E. Bernard & Co., Hamburg, Hamburg, 1 cs., 5 bls.
F. J. Emmerich, Hamburg, Hamburg, 1 cs., 20 bls.
R. F. Downing & Co., Minnetonka, London, 14 bls.
F. J. Emmerich, Brittannic, Liverpool, 1 pkge.
The Prager Co., Westernland, Antwerp, 40 bls.
Kensington Wallpaper Co., American Shipper, London, 4 cs., 5 bls.
A. L. Diament Co., Homeric, Southampton, 3 cs.
J. E. Bernard & Co., Acquitania, Southampton, 10 bls.

PAPER HANGINGS

W. H. S. Lloyd & Co., Minnetonka, London, 16 bls., 2 cs.
A. C. Dodman Jr., Inc., Britannic, Liverpool, 2 bls., 3 cs.
Whiting & Patterson Co., Inc., Homeric, Southampton, 2 bls., 1 cs.
Whiting & Patterson Co., Inc., Aquitania, Southampton, 6 bls., 1 cs.

NEWS PRINT

Perkins Goodwin, & Co., St. Louis, Hamburg, 234 rolls.
Perkins Goodwin, & Co., Columbus, Bremen, 104 rolls.
Staats Herold Corp., Hellig, Olav Oslo, 9 rolls.
W. H. Bell, Markland, Liverpool, N. S., 3,795 rolls.
J. Madden, Stuttgart, Bremen, 284 rolls.
Johanson Wales & Sparre, Inc., Kungsholm, Gothenburg, 20 rolls.
J. Madden, Sagauche, Kotka, 484 rolls.
Baldwin Paper Co., Sagauche Kotka, 446 rolls.

PRINTING PAPER

Japan Paper Co., Columbus, Bremen, 5 cs.
International F'd'g Co., J. Jadot, Antwerp, 47 cs.
Walker Goulard Plehn Co., Stuttgart, Bremen, 40 cs.
Dingelstedt & Co., Stuttgart, Bremen, 13 cs.
Japan Paper Co., Leviathan, Southampton, 2 cs.
Keller Dorian Paper Co., Lafayette, Harve, 13 cs.
——, G. Washington, Hamburg, 7 cs.
Keuffel & Esser Co., G. Washington, Hamburg, 10 rolls.
T. N. Fairbanks Co., Aquitania, Southampton, 6 cs.
Public National Bank, Hinnoy, Marseilles, 8 cs.

WRAPPING PAPER

Wilkinson Bros. & Co., Inc., Kungsholm, Gothenburg, 5 bls.
Sylvania Industrial Corp., Westernland, Antwerp, 24 cs.
Southern Pacific Co., Cabo Torres, Genoa, 300 bls.

PACKING PAPER

M. Harrison Co., Hamburg, Hamburg, 61 cs.

BLUE PRINT PAPER

C. Bruning Co., Hamburg, Hamburg, 6 cs.

COLORED PAPER

C. H. Powell, Columbus, Bremen, 1 cs.
S. Gilbert, Columbus, Bremen, 17 cs.
H. Lange, Columbus, Bremen, 3 cs.
J. Beckhard, Columbus, Bremen, 3 cs.
——, Stuttgart, Bremen, 13 cs.

FILTER PAPER

C Schleicher Schull Co., Hamburg, Hamburg, 4 cs.
H. Reeve Angel & Co., Inc., Minnetonka, London, 12 cs.
H. Reeve Angel & Co., Inc., Homeric, Southampton, 20 cs.
E. Fougera & Co., Homeris, Southampton, 25cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., Minnetonka, London, 5 cs.
Keuffel & Esser Co., G. Washington, Hamburg, 33cs.

BASIC PAPER

Globe Shipping Co., Columbus, Bremen, 28 cs.

RAW BASE PAPER

A. H. Niemeyer, Homeric, Southampton, 20 cs.

BARYTA COATED PAPER

Globe Shipping Co., Columbus, Bremen, 177 cs.

SURFACE COATED PAPER

Quality Art Novelty Co., Hamburg, Hamburg, 2 cs.

COATED PAPER

Bank of America Natl. Assn., Hamburg, Hamburg, 13cs.

METAL COATED PAPER

Titan Shipping Co., Hamburg, Hamburg, 4 cs.
K. Pauli Co., Hamburg, Hamburg, 53 cs.
W. Wrigley Co., J. Jadot, Antwerp, 122 cs.
——, J. Jadot, Antwerp, 9 cs.
Winter Wolff Co., J. Jadot, Antwerp, 1 cs.
Globe Shipping Co., Stuttgart, Bremen, 107 cs.
F. C. Gerlach, Stuttgart, Bremen, 5 cs.

PHOTO PAPER

J. H. Schroeder Banking Corp., Columbus, Bremen, 3 cs.
——, Homeric, Southampton, 2 cs.

WRITING PAPER

Guibout Freres, Homeric, Southampton 1 cs.
Globe Shipping Co., Homeric, Southampton, 1 cs.
Stern Bros., Aquitania, Southampton 2 cs.
International F'd'g Co., Aquitania, Southampton, 2 cs.

DECALCOMANIA PAPER

L. A. Consmiller, Columbus, Bremen, 6 cs.
B. F. Drakenfeld & Co., Britannic, Liverpool, (duplex) 31 cs

PARCHMENT PAPER

S. Bienfang, Statendam, Rotterdam, 27 cs.

ENVELOPES

J. Berkhard, Columbus, Bremen, 59 cs

NOTE PAPER

H. Reeve Angel & Co., Inc., Minnetonka, London, 1 cs.

GUMMED PAPER

Meadows Wye & Co., Minnetonka, London, 2 cs.

STENCIL PAPER

W. L. Newberry, Leviathan, Southampton, 1 cs.

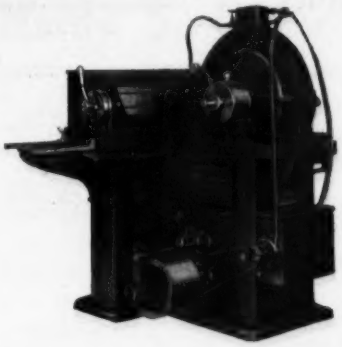
PAPER

International Trust Co., Statendam, Rotterdam, 13 cs.
Globe Shipping Co., Statendam, Rotterdam, 22 cs.
Keuffel & Esser Co, Statendam, Rotterdam, 16 cs.
J. H. Faunce, Statendam, Rotterdam, 16 cs.
R. F. Downing & Co., Hamburg, Hamburg, 2 cs.
C. Bruning Co., J. Jadot, Antwerp, 4 cs.
H. Reeve Angel & Co., Inc., Stuttgart, Bremen, 1 cs.
Hensel Bruckman & Lorbacher, Stuttgart, Bremen, 15 cs.
——, Stuttgart, Bremen, 30 cs., 12 crates.
The Borregaard Co., Inc., Gripsholm, Gothenburg, 264 bls., 971 rools.
The Borregaard Co., Inc., Kungsholm, Gothenburg, 228 rolls 30 bls.
Japan Paper Co., Kungsholm, Gothenburg, 2 cs.
Kreamer & Co., Kungsholm, Gothenburg, 223 bls.
Walker Goulard Plehn Co., Kungsholm, Gothenburg, 238 bls.
E. H. Sargent & Co., Kungsholm, Gothenburg, 9 cs.
American Express Co., Rochambeau, Havre, 3 cs.
Kensington Wallpaper Co., Rochambeau, Havre, 4 cs.
Gimbel Bros., Rochambeau, Havre, 1 cs.
Cheramy, Inc., Homeric, Southampton, 1 cs.
P. J. Schweitzer, Lafayette, Havre, 28 cs.
Hensel Naeve Co., G. Washington, Hamburg, 3 bls.

RAGS, BAGGINGS, ETC.

Amtorg Trading Co., Exford, Odessa, 6,078 bls. rags.
Intl. Acceptance Bank, Stuttgart, Bremen, 51 bls, bagging.
Baring Bros. & Co., Minnetonka, London, 15 bls. rags.
E. J Keller Co, Inc, Republic, ——, 14 bls. rags.
M. Snedeker Corp., Britannic, Liverpool, 61 bls. paperstock.
S. Birkenstein & Son, Carmania, London, 153 bls. paperstock.
Spaulding Fibre Co., Gravenstein, Antwerp, 60 bls. rags.
——, Gravenstein, Antwerp, 173 bls. rags.
A. W. Fenton, Inc., Tomalva, Rotterdam, 27 bls. rags.
Castle & Overton, Inc.,Tomalva, Rotterdam, 121 bls. bagging.

(Continued on Page 68)



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WHEN GROUND ON
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MASSIVE COMPACT VIBRATIONLESS

Furnished in either Straight or Cup wheel type Sizes for knives up to 60" in length.

Full details will be cheerfully furnished.

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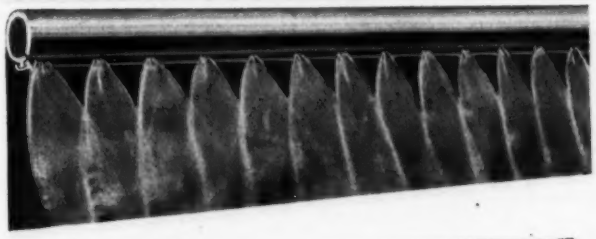

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New Sandusky Shower an Improvement

Millspaugh Shower Pipes have had a successful history. Simple in construction, efficient in operation, economical in cost and water consumption—these are the reasons why mill operators have used over 6,000 Millspaugh Shower Pipes.

The New Sandusky Shower retains these distinctive operating features. In addition, however, the Sandusky Shower is made with a movable and removable deflecting lip. This patented construction interests every man who investigates the advantages of the Sandusky Shower.

No advance in price.

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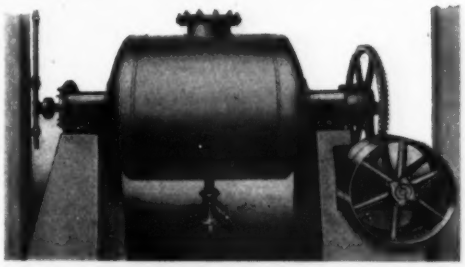
AN ENGINEERING AND FABRICATING SERVICE IN CHROME NICKEL ALLOYS



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We have pioneered in the design and manufacture of sulphite mill equipment in Stainless Steels. Our engineering department is familiar with sulphite operating requirements—our operators are specially trained and thoroughly experienced in working chrome nickel—our shops are equipped to turn out welded, riveted, fabricated, machined products to meet your especial needs.

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Improved models make CELLOPHANE BAGS and print up to three colors. New Aniline Printer, applicable to any bag machines, prints in three colors at maximum speed.

H. H. HEINRICH, INC. 15 Park Row, New York

Imports of Paper and Paper Stock

(Continued from page 66)

The Barrett Co., Marengo, Antwerp, 64 bls. rags.
Castle & Overton, Inc., Marengo, Antwerp, 78 bls. rags.
Van Oppen & Co., Marengo, Antwerp, 27 bls. rags.
Kidder Peabody Accep. Corp., Savoia, Genoa, 60 bls cotton waste.
Banco Coml. Italiane Trust Co., Savioa, Genoa, 104 bls. bagging.
Castle & Overton, Inc., Cabo Torres, Barcelona, 170 bls. rags.
Arkus, Inc., Cabo Torres, Barcelona, 130 bls. rags.
Irving Trust Co., Hinnoy, Barcelona, 41 bls. rags.
Chemical Bank & Trust Co., Hinnoy, Barcelona, 53 bls. bagging.

OLD ROPE

W. Steck & Co., Savoia, Genoa, 109 bls.
N. E. Berzen, Cabo Torres, Barcelona, 75 bls.
Castle & Overton, Inc., Cabo Torres, Barcelona, 21 bls.
International Trust Co., Hinnoy, Barcelona, 39 bls.

WOOD PULP

——, Kolsnaren, Tolkis, 405 bls. sulphite.
Pagel Horton & Co., Inc., Kolsnaren, Gefle, 750 bls. sulphite.
Bulkley Dunton & Co., Kolsnaren, ——, 500 bls. sulphite.
Castle & Overton, Inc., St. Louis, Hamburg, 434 bls. wood pulp, 74 tons.
Castle & Overton, Inc., Hamburg, Hamburg, 414 bls. wood pulp, 60 tons.
Atterbury Bros., Inc., Hellig, Olav Oslo, 500 bls. wood pulp, 100 tons.
M. Gottesman & Co., Inc., Kungsholm, Gothenburg, 750 bls. sulphite.
Parsons & Whittemore, Inc., Kungsholm, Gothenburg, 1260 bls. sulphate.
Lagerloef Trading Co., Sagauche, Kemi, 940 bls. wood pulp, 156 tons.
Lagerloef Trading Co., Sagauche, Rauma, 320 bls. sulphite, 52 tons.
——, Sagauche, Kotka, 1495 bls. sulphite, 253 tons.
E. M. Sergeant & Co., Carplaka, Hernosand, 750 bls. sulphite 125 tons.
——, Carplaka, Hernosand, 1800 bls. sulphite, 300 tons.
Bulkley Dunton & Co., Carplaka, ——, 3630 bls. sulphite, 605 tons.
E. J. Keller Co., Inc., G. Washington, ——, 367 bls. wood pulp, 56 tons.

PULPWOOD

Chase National Bank Queen Maud, Archangel, 3157 cords.
——, Flint 2nd, Harstad, 3648 cords.

BOSTON IMPORTS

WEEK ENDING NOVEMBER 8, 1930

Lagerloef Trading Co., Sagauche, Keni, 2420 bls. sulphate, 407 tons.
Lagerloef Trading Co., Sagauche, Rauma, 320 bls sulphite, 52 tons.
——, Sagauche, Kotka, 2471 bls. sulphite 413 tons.
——, Sagauche, Kotka, 1143 bls. sulphate, 230 tons.
Logerloef Trading Co., Sagauche, Helsingfors, 169 bls sulphite, 25 tons.
J. Carter & Co., Sagauche, Kotka, 131 ble. newsprint.
G. M. Graves Co., Mississippi, London, 90 bls. rags.
Brown Bros & Co., Mississippi, London, 192 coils old rope.
Cricker Burbank Co., Mississippi, London, 642 bls. wastepaper.
J. B. Woodruff Co. Mississippi, London, 55 bls. rags.
Castle & Overton, Inc., Tomalva, Rotterdam, 2380 bls. wood pulp, 378 tons.
Price & Pierce, Ltd., Carplaka Wallvik, 9500 bls. sulphate, 1250 tons.
Price & Pierce, Ltd., Carplaka, Wallvik, 6300 bls. sulphite, 1000 tons.
Parsons & Whittemore, Inc., Carplaka, Wallvik, 100 bls. sulphate, 20 tons.
Bulkey Dunton & Co., Carplaka, ——, 1000 bls. sulphate, 200 tons.
——, Carplaka, Hernosand, 6000 bls. sulphite, 1000 tons.
——, Carplaka, Hernosand, 2700 bls. sulphite, 200 tons.
Pagel Horton & Co. Inc., Carplaka, Domsjo, 1950 bls. sulphite, 325 tons.
Perkins Goodwin & Co., Carplaka, Obbola, 4375 bls. sulphate, 625 tons.

NORFOLK IMPORTS

WEEK ENDING NOVEMBER 8, 1930

Castle & Overton, Inc., Tomalva, Rotterdam, 170 bls. wood pulp, 27 tons.
——, Mississippi, London, 3 cs. coated tissue paper.

PHILADELPHIA IMPORTS

WEEK ENDING NOVEMBER 8, 1930

Katzenstein & Keene, Inc., Liberty, St. Nazaire, 186 bls. rags.
P. Berloqitz, Liberty, St. Nazaire, 46 bls. rags.
Castle & Overton, Inc., Liberty St. Nazaire, 159 bls. rags.
Robert Blank, Liberty, Bordeaux, 53 bls rags.
Katzenstein & Keene, Inc., Liberty, Bordeaux, 411 bls. rags.
D. I Murphy, Collamer, Havre, 104 bls. rags.
E. H. Bailey Co. Collamer, Havre, 1 cs. paper.
Strawbridge & Clothier, Collamer, Havre, 2 cs. writing paper.
J. M. Hagy Waste Works, Collamer, Dunkirk, 95 bls. rags.
Union Waste Co., Collamer, Dunkirk, 24 bls. rags.
D. I. Murphy, Collamer, Dunkirk, 6 bls. rags.
Katzenstein & Keene, Inc., Collamer, Dunkirk, 169 bls. rags.
Lagerloef Trading Co., Sagauche, Kemi, 3300 bls. sulphite, 551 tons.
——, Sagauche, Kotka, 103 rolls newsprint.
——, Examiner, Alexandria, 151 bls. rags.
Castle & Overton, Inc., Tomalva, Rotterdam, 340 bls. wood pulp, 54 tons.
J. A. Steer & Co., Tomalva, Rotterdam, 448 bls. rags.
S. E. Ingber, Tomalva, Rotterdam, 139 bls. fustians.
E. J. Keller Co., Inc., Tomalva, ——, 149 bls. rags.
Liberty National Bank, Savoia, Naples, 39 bls. rags.
Chemical Bank & Trust Co., Cabo Torres, Barcelona, 32 bls. rags.
——, Cabo Torres, Barcelona, 80 bls. rags.
S. E. Ingber, Cabo Torres, Barcelona, 31 bls. rags.
National Vulcanized Fibre Co., Cabo Torres, Barcelona, 63 bls. rags.
——, Cabo Torres, Marseilles, 94 bls. rags.
Castle & Overton, Inc., Hinnoy, Barcelona, 285 bls. rags.
——, Hinnoy, Barcelona, 75 bls. rags.
E. J. Keller Co., Inc., Ilmar, ——, 510 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING NOVEMBER 8, 1930

——, Kolsnaren, Tolkis, 3418 bls. sulphite.
——, Kolsnaren, Wiborg, 5228 bls. sulphite.
——, Kolsnaren, Wiborg, 3128, bls. sulphate.
J. Anderson & Co., Kolsnaren, Hernosand, 6000 bls. sulphate.
Pagel Horton & Co., Inc., Kolsnaren, Gefle, 5000 bls. sulphite.
Bulkley Dunton & Co., Kolsnaren, ——, 1375 bls. sulphite.
Lagerloef Trading Co., Sagauche, Kemi, 8451 bls. sulphite, 1415 tons.
Lagerloef Trading Co., Sagauche, Rauma, 3520 bls. sulphite, 645 tons.
——, Sagauche, Kotka, 355 bls. wood pulp, 71 tons.
——, Sagauche, Kotka, 1053 bls. sulphate, 211 tons.
——, Sagauche, Kotka, 2350 bls. sulphite, 414 tons.

BALTIMORE IMPORTS

WEEK ENDING NOVEMBER 8, 1930

W. Steck & Co., Collamer, Dunkirk, 65 bls. flaxwaste.
M. W. Pryor, Mississippi, London, 75 coils old rope.
Castle & Overton, Inc., Tomalva, Rotterdam, 420 bls. wood pulp.
Brown Bros. & Co., Tomalva, Rotterdam, 91 coils old rope.

Harbor Improvements To Aid Paper Mills

OSWEGO, N. Y., November 10, 1930—Announcement is made that the Oswego River Power Corporation and Floyd L. Carlisle & Co., have guaranteed advances in funds up to $100,000 on demand by the government engineers for construction of breakwaters and improvements in Oswego harbor. The statement was issued through the Oswego Harbor and Dock Commission which is interested in the project. According to F. B. Sheperd, president of the commission, the advancement of funds and assurance they would be available when needed was made personally by Floyd L. Carlisle with the objective of aiding the city in its program of harbor improvements. The Carlisle interests are identified with large paper mill interests in this section.

To Investigate Cigarette Paper

WASHINGTON, D. C., November 12, 1930.—The United States Tariff Commission has announced that it will hold a hearing on December 11 in connection with its investigation into the tariff rates on cigarette paper.

Bankers Visit Champion Coated Plant

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, November 10, 1930.—Special buses carrying approximately 200 Cincinnati bankers will arrive in Hamilton at noon tomorrow for the purpose of conducting an industrial tour of the Champion Coated Paper Company's plant.

The visitors are all members of the American Institute of Banking and are interested in the success of industrial enterprises.

The bankers will be received by Walter Randall, Logan Thomson and Alexander Thomson, Officials of the Champion Coated Paper Company.

B. R. Cleveland Goes With Smith & Winchester

Byron R. Cleveland who for the past ten years has been with The J. H. Horne & Sons Company at Lawrence, Mass., has severed his connections with that company to accept position as general sales manager for the Smith & Winchester Manufacturing Company at South Windham, Conn.

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BUDGETARY CONTROL

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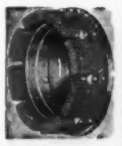

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, November 12, 1930.

Conditions in the New York market were not radically changed during the week, although there is a distinctly stronger undertone on many grades and authorities predict a coming trend toward somewhat higher prices.

In the newsprint market, shipments continue in excess of production, and quotations remain at the same levels.

The better grades of paper hold firm, with steady request noted for book and bond papers. Coarser grades remain in fair demand, with quotations generally as of last week. The output of the board mills moves slowly into consumption.

Mechanical Pulp

The market for ground wood pulp exhibits small variation. Prices continue to be made for future shipment at approximately the same ratio, and shipments are being made at a fair pace.

Chemical Pulp

The demand for chemical pulp is increasing since the recent arrangement made by the mills of Scandinavia, Germany and Czecho-Slovakia to curtail production. This plan has already gone into effect with a view to enabling mills to get cost or better, which they state they are not getting today.

Old Rope and Bagging

There has been somewhat increased interest shown in the market for gunny, and demand is steadily improving, with prices advanced on several grades. Business in old rope remains about the same.

Rags

Business in the rag market shows some activity, with prices holding to the same general level. There is some slight demand for foreign rags, both old and new, with domestics lower in price and in better demand.

Waste Paper

The better grades of waste paper are holding at steady levels, and all varieties are in good request. There is a little shading of prices noted on the lower grades.

Twine

The local market for twine holds firm, with quotations being made on approximately the same basis as those of last week. The prospect of the coming holiday season adds to the movement of shipments in this field.

Major Steele To Speak To Boston Paper Men

The annual fall meeting of the Boston Paper Trade Association will be held at the Exchange Club on Wednesday evening, November 19. The chief speaker of the occasion will be Major Harwood Steele of the Royal Canadian Mounted Police, well known as a writer of historical novels and fiction dealing with the adventures of the Royal Northwest Mounted Police.

Perry Burnham Von Olker Dead

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 10, 1930.—The funeral services for Perry Burnham Von Olker, late president of the Von Olker-Snell Paper Company, was held from the Waterman Chapel yesterday, with a number of the trade attending. Mr. Von Olker, who died at the Rogers Memorial Hospital Thursday, of arthritis of the spine, had not been able to come to his office for the last six months, on account of his illness.

In early life, Mr. Von Olker started with Rice, Kendall & Co., the oldest and most prominent paper house in New England in its day. When that firm went out of business Mr. Von Olker, with two others employees of the company, Frank S. Arnold and Harry L. Roberts, formed the Arnold-Roberts Company, of which Mr. Von Olker was vice-president. In 1913 he severed his connection with the Arnold-Roberts Company, becoming president of the Von Olker-Snell Company, of which Joseph D. Snell is treasurer.

Mr. Von Olker was a member of the Braeburn Country Club West Newton, Mass., and a number of Masonic bodies.

His wife and a daughter, Miss Dorothy Von Olker, are living.

Fort Edward Mill On Full Time Schedule

[FROM OUR REGULAR CORRESPONDENT]

FORT EDWARD, N. Y., November 8, 1930—The local mill of the International Paper Company returned this week to a full time working schedule and it is understood it will continue indefinitely. The plant has been running on curtailed schedules but the receipt of additional orders allowed the resumption of a five-day week. It was also announced that business conditions have continued to show improvement and there are slight prospects of any further curtailments for the next few months. The local mill has operated at capacity since it was remodeled about two years ago and several hundred employees are furnished steady employment. A large barge containing several hundred tons of waste paper for the mill was received this week at the terminal here and was later conveyed in trucks to its destination. The barge is to be reloaded with a large shipment of news print from Finch, Pruyn & Co. to be sent to New York City.

Papermakers Asked to Choose N. E. Pulp

BOSTON, Mass., November 10, 1930.—The executive committee of the Massachusetts emergency committee on unemployment last week passed a resolution calling upon concerns making paper to use New England wood pulp in preference to imported pulp. The committee also called upon the federal authorities to stem the influx of the foreign pulp into the country.

After the meeting Chairman James J. Phelan said, "Importation of pulpwood has thrown thousands of men out of work who are normally working in the woods at this time of year. This affects not only the woodsmen but many other industries, clothing, wood, tools and such. This resolution will be called to the attention of the United States department of commerce, Col. Wood's committee on unemployment and governmental authorities in other New England states."

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, November 12, 1930.

BLANC FIXE.—The situation in the blanc fixe market is unchanged. Pulp is quoted at $42.50 to $45.00 per ton, and powder goes for 3¾ to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—Renewals of contracts on bleaching powder are now being made on the same basis as those of 1930. Quotations are $2.00 to $2.35 per 100 pounds, at works, in drums. Contract shipments are being made steadily.

CASEIN.—The demand for casein remains good. Domestic standard ground is quoted at 10 cents, while finely ground is sold at 12½ cents per pound. Argentine standard is now 11½ cents, with finely ground at 12 cents per pound, in bags, car lot quantities.

CAUSTIC SODA.—Prices on caustic soda are practically standarized at $2.90 for the solid, while the ground and flake sells at $3.30 per 100 pounds, in large drums, at works. This bids fair to hold steady, since contracts are now being made for 1931 at these prices.

CHINA CLAY.—The china clay market shows no fluctuation, and contracts are being signed on the same basis as those of 1930. Prices are $15 to $25 per ton, ship side, for the imported varieties, and the domestic grades are quoted at $8 to $13 per ton, at mine.

CHLORINE.—Demand for chlorine remains steady, with quotations still at $2.35 to $2.40 per 100 pounds, in multi-unit cars, or tanks, at works, in ton lots or more.

ROSIN.—A firm tone continues to prevail in the market for rosin. Gum rosin is now being sold at $5.45 to $5.55 per 280 pounds at yard, in barrels. Wood rosin is still offered at $4.66 per 280 pounds, at works, in car lots.

SALT CAKE.—Moderate activity was shown in the salt cake market this week, with shipments against contract moving forward. The price of $17 to $18 per ton holds steady, with chrome salt cake quoted at $16 to $17 per ton, in bulk, at works.

SODA ASH.—Somewhat stronger trading is taking place in the market for soda ash, with demand slightly increased, and prices at $1.32 in bags, $1.55 in barrels, both in car lots, per 100 pounds, at works. Contracts for soda ash are now being solicited, repeating the 1930 prices.

STARCH.—The starch market remains steady, and the contract movement continues at seasonal pace. Paper making special starch is sold at $3.62 per 100 pounds, in bags; in barrels at $3.89.

SULPHATE OF ALUMINA.—Conditions in the sulphate of alumina market are firm, and demand is fairly strong. Commercial grades are still quoted at $1.45 to $1.50, with iron free from $1.95 to $2.00 per 100 pounds, in barrels, at works.

SULPHUR.—Request for sulphur is steady, and prevailing prices are $18 per ton, at mine, on contract for 1,000 tons or more. Smaller quantities go for $20 per ton. Spot and nearby carloads remain priced at $21 per ton.

TALC.—Paper mill demand for talc is seasonal, and quotations are from $16 to $18 per ton, in bulk, for domestic grades. Prices on imported talc are $18 to $20 per ton, in bags, ship side.

New Water-Wall Catalog

American Engineering Company, of Philadelphia, have just published a new water-wall catalog, which completes the story of Taylor Stokers and A-E-Co. Furnace Armor. This new catalog "Zoned Water Cooling and Armored Furnaces", is claimed to be the first treatise on water walls which has yet appeared.

With water cooling as furnace wall protection is shown to be only one of many beneficial results, among which are: Increasing steaming capacity economically, reducing furnace maintenance, reducing stoker maintenance, ability to burn lower grades of coal, reducing boiler outage, increasing efficiency and desirability with high preheated air temperature.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	11.00	@	38.00
Bonds	6.75	@	53.25
Writings—			
Extra Superfine	14.00	@	32.00
Superfine	14.00	@	32.00
Tub sized	10.00	@	15.00
Engine sized	6.75	@	11.00
Book, Cased—			
S. & S. C.	6.00	@	7.50
M. F.	5.75	@	7.00
Coated and Enamel	7.50	@	12.00
Lithograph	7.50	@	12.00
Tissues—Per Ream—			
White No. 1	.65	@	.67½
Anti-Tarnish M G only	.65	@	.70
Colored	.70	@	.90
White No. 2	.55	@	.57½
Kraft	.65	@	.70
Manila	.55	@	.57½
Kraft—			
No. 1 Domestic	5.25	@	6.25
No. 2 Domestic	3.75	@	4.50
Southern	3.50	@	3.75
Imported	6.00	@	7.00
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.50	@	4.00
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs.	.10	@	—
Bleached, basis 20 lbs.	.13	@	—

(Delivered New York)

News, per ton—			
Rolls, contract	62.00	@	—
Rolls, spot	62.00	@	—
Sheets	67.00	@	—
Side Runs	47.00	@	52.00
Boards—per ton—			
News	30.00	@	32.50
Straw	40.00	@	45.00
Chip	27.50	@	30.00
Binders' Boards	65.00	@	70.00
85 Test Jute Liner	38.00	@	40.00
Sgl. Mla. Ll. Chip.	42.50	@	45.00

(F. o. b. Mill)

Wood Pulp Boards	70.00	@	80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—			
Moist	28.00	@	30.00
Dry	30.00	@	32.00

(F. o. b. Mill)

No. 1 Domestic	26.00	@	30.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	3.00	@	4.25
Easy Bleaching	2.60	@	2.80
No. 1 strong unbleached	2.10	@	2.65
Mitscherlich unbleached	2.25	@	2.85
No. 2 strong unbleached	2.10	@	2.35
No. 1 Kraft	1.65	@	1.90
No. 2 Kraft	1.55	@	1.65
Sulphate—			
Bleached	3.40	@	3.85

(F. o. b. Pulp Mill)

Sulphite (Domestic)—			
Bleached	2.65	@	4.75
Easy Bleaching Sulphite	2.55	@	2.75
News Sulphite	2.35	@	2.60
Mitscherlich	2.75	@	3.25
Kraft (Domestic)	2.10	@	2.75
Soda Bleached	2.90	@	3.20

Domestic Rags

New Rags

(Prices to Mill f. o. b N. Y.)

Shirt Cuttings—			
New White, No. 1	8.00	@	8.50
New White, No. 2	7.00	@	7.25
Silesias No. 1	6.50	@	7.00
New Unbleached	8.25	@	9.00
New Blue Prints	5.25	@	5.50
New Soft Blacks	4.00	@	4.50
Blue Overall	6.25	@	6.50
Washables	4.25	@	4.75
Fancy	4.75	@	5.25
Mixed Khaki Cuttings	4.75	@	5.25
Pink Corset Cuttings	7.50	@	8.00
O. D. Khaki Cuttings	5.15	@	5.75
Men's Corduroy	3.50	@	4.00
New Mixed Blacks	3.25	@	3.50

Old Rags

White, No. 1—			
Repacked	5.25	@	5.75
Miscellaneous	4.25	@	4.75
White, No. 2—			
Repacked	3.00	@	3.50
Miscellaneous	2.30	@	2.50
St. Soiled, White	1.50	@	1.75
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.65	@	1.85
Black Stockings	3.25	@	3.75
Roofing Rags—			
Cloth Strippings	1.25	@	1.30
No. 1	1.25	@	1.30
No. 2	.90	@	1.00
No. 3	.70	@	.80
No. 4	.65	@	.70
No. 5A	.50	@	.60

Foreign Rags

New Rags

New Dark Cuttings	2.30	@	2.50
New Mixed Cuttings	2.25	@	2.75
New Light Silesias	6.25	@	6.50
Light Flannelettes	6.50	@	7.00
Unbleached Cuttings	9.00	@	9.50
New White Cuttings	7.50	@	8.00
New Light Oxfords	6.00	@	6.50
New Light Prints	4.75	@	5.25

Old Rags

No. 1 White Linens	7.25	@	7.50
No. 2 White Linens	5.75	@	6.75
No. 3 White Linens	4.75	@	5.25
No. 4 White Linens	3.00	@	3.50
No. 1 White Cotton	5.50	@	5.75
No. 2 White Cotton	4.50	@	5.00
No. 3 White Cotton	3.00	@	4.00
No. 4 White Cotton	1.70	@	1.80
Extra Light Prints	2.75	@	3.00
Ord. Light Prints	2.15	@	2.40
Med. Light Prints	1.65	@	1.75
Dutch Blue Cottons	2.00	@	2.10
French Blue Linens	2.65	@	2.75
German Blue Linens	2.25	@	2.40
German Blue Cottons	1.85	@	1.90
Checks and Blues	1.85	@	1.90
Lindsay Garments	1.20	@	1.30
Dark Cottons	1.00	@	1.10
Old Shopperies	.95	@	1.00
New Shopperies	.95	@	1.05
French Blues	1.90	@	2.00

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.55	@	1.65
Domestic	1.65	@	1.75
Wool Tares, light	1.35	@	1.45
Wool Tares, heavy	1.40	@	1.45
Bright Bagging	1.35	@	1.45
Small Mixed Rope	.90	@	1.00
Manila Rope—			
Foreign	2.75	@	3.00
Domestic	3.25	@	3.50
New Burlap Cut	2.25	@	2.50
Hessian Jute Threads—			
Foreign	3.50	@	4.00
Domestic	2.50	@	2.75

Old Waste Papers

(F. o. b. New York)

Shavings—			
Hard, white, No. 1	3.00	@	3.25
Hard, white, No. 2	2.40	@	2.50
Soft, white, No. 1	2.70	@	2.80
White envelope cuttings	2.95	@	3.10
Flat Stock—			
Stitchless	.95	@	1.05
Overissue Mag.	.95	@	1.05
Solid Flat Book	.80	@	.95
Crumpled No. 1	.70	@	.85
Solid Book Ledger	1.90	@	2.00
Ledger Stock	.95	@	1.05
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut.	2.10	@	2.25
New Cuttings	1.40	@	1.60
Extra No. 1 old	1.25	@	1.35
Print	.60	@	.65
Bogus Wrapper	.60	@	.65
Container	.35	@	.45
Old Kraft Machine—			
Compressed bales	1.35	@	1.45
News—			
No. 1 White News	1.77	@	1.87
Strictly Overissue	.45	@	.50
Strictly Folded	.35	@	.40
No. 1 Mixed Paper	.25	@	.30
Common Paper	Nominal		

FARREL-BIRMINGHAM
COMPANY INC.
50 STATE ST., ANSONIA, CONN.

PAPER MILL MACHINERY:

Paper and Board Calenders

Chilled Iron Rolls for Various Purposes

Roll Grinders, Roll Calipers

Coating, Saturating, Silicating, Paraffining, and Waxing Machines

Hydraulic Pulp Dehydrating Presses, Calender Roll Recovering Presses

See MECHANICAL CATALOGUE A. S. M. E.

Roll Grinding Machines: Two-Wheel Roll Grinding Machines with swing rest and cam type crowning device always produce an absolutely accurate and correct shape; noted for efficiency and low-grinding costs. List of installations on request, with sizes and specifications.

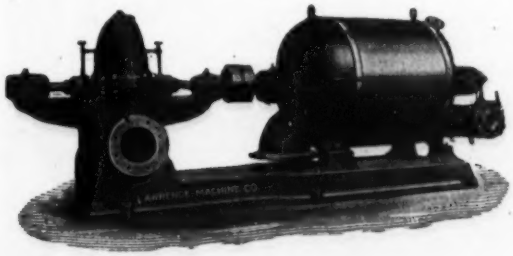
NEW RECORDS FOR PRODUCTION AND PRECISION ARE MADE ON FARREL-BIRMINGHAM MACHINES

Horizontally Split Casing Double Suction Pumps

LAWRENCE PUMPS

The name protects and guarantees you satisfaction.

We are the original designers and builders of the LAWRENCE PUMP.



Lawrence pumps for all conditions and services. Forty-four years of practical experience with centrifugal pump development places us among the leaders. Our efforts have been rewarded by the acceptance of our product in general.

Thousands of installations and the successful performance of our pumps should be sufficient proof of our ability to handle your pumping problems. Our engineering force is at your command.

Have only Lawrence Pumps, manufactured by the

Lawrence Machine & Pump Company
361 Market St. Lawrence, Mass.

EDGAR CLAYS

AMERICAN MADE FOR THE AMERICAN TRADE

H. T. BRAND COATING CLAY
and
High Grade Filler Clay

Edgar Clays are the result of almost half a century of experience in Washing Clay. Technical Service available for both coating and loading without charge.

EDGAR BROS. CO.
50 Church St. New York

500 Tons Daily

We will be glad to send you samples—

Twines
(F. o. b. Mill)

Cotton—			
No. 1	.22	@	.24
No. 2	.21	@	.22
No. 3	.19	@	.20
B. C., 18 basis	.32	@	.34
A. Italian, 18 basis	.39	@	.40
Finished Jute—			
Dark 18 basis	.20½	@	.21
Light 18 basis	.22½	@	—
Jute Wrappings, 3-6 Ply—			
No. 1	.14¼	@	—
No. 2	.13¾	@	—
Tube Rope—			
4-ply and larger	.10¼	@	—
Fine Tube Rope—			
4-ply	.12¾	@	—
3-ply	.13¾	@	—
2-ply	.14¾	@	—
Paper Makers Twine			
Balls	.08¾	@	—
Box Twine, 2-3 ply	.09	@	.10
Jute Rope	.11	@	.12
Amer. Hemp, 6	.29	@	.31
Java Sisal			
No. 1 Basis	.14½	@	.15½
No. 2 Basis	.13½	@	.14½
New Zealand Sisal	.13½	@	.15½
Sisal Lath Yarn—			
No. 1	.14	@	.16
No. 2	.12	@	.14
Manila Twine	.22½	@	.24½

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	5.00	@	5.50
Southern Kraft	3.75	@	4.00
No. 2 Kraft	3.75	@	4.00
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¾
Manila Tissue—			
24x36 Sheet	.07	@	.07¼
White Tissue—			
20x30 Sheet	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	62.00	@	—
Sheets	67.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	37.50	@	—
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.40
White Env. Cut-			
No. 1 Soft Shavings	2.10	@	2.15
No. 1 Mixed	.30	@	.35
No. 2 Mixed	.25	@	.35
Ledger & Writings	.90	@	.95
Solid Books	.90	@	.95
Blanks	1.60	@	1.65
Kraffts	1.30	@	1.40
New Kraft Cuts	1.50	@	1.70
Manila Envelope Cut-			
tings	1.65	@	1.70
Ex. No. 1 Manila	1.30	@	1.45
Print Manila	.45	@	.50
Folded News (over-			
issue	.40	@	.45
Old Newspapers—			
No. 1	.35	@	.40
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.30	@	.35
Roofing Stocks—			
(F. o. b. Chicago, net cash)			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.05	@	.40
Ledgers	.08	@	.40
Writings—			
Superfine	.12¾	@	.18
Extra fine	.18	@	.22
Fine	.17	@	.26
Fine, No. 2	.15	@	.25
Fine, No. 3	.09	@	.20
Book, M. F.	.05	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.09	@	.16
Coated Lithograph	.07	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.03½	@	.05½
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03½	@	.04
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.03½
Common Bogus	.03	@	.04
(Delivered Philadelphia)			
News Print Rolls	62.00	@	—
Straw Board	52.50	@	70.00
News Board	32.50	@	35.00
Chip Board	30.00	@	32.00
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	75.00		
No. 2, per ton	70.00		
Carload lots	68.00	@	70.00
Tarred Felts—			
Regular	55.50	@	57.00
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply			
(per roll)	1.95	@	2.10
Best Tarred, 2-ply			
(per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.09	@	.09½
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07	@	.09
Black Silesia, soft	.05	@	.05½
New Unbleached	.08½	@	.09
Washable, No. 1	.04½	@	.05
Blue Overall	.07½	@	.08
Cottons—According to grades—			
Washable, No. 2	.03	@	—
New Blue	.03	@	.03¼
Fancy	.05	@	.05½
New Black Soft	.05	@	.05¾
New Light Seconds	.02½	@	.03
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.05½	@	.05¾
No. 2 Mixed	.04½	@	.04¾
Corduroy	.03	@	.03½
New Canvas	.08½	@	.09
New Black Mixed	.03¾	@	.04½

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	3.50	@	4.00
Sisal Rope	1.50	@	—
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1, New Light			
Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.65	@	2.75
No. 2 Hard White	2.30	@	2.50
No. 1 Soft White	2.25	@	2.50
No. 2 Soft White	1.40	@	1.60
No. 1 Mixed	.90	@	1.00
No. 2 Mixed	.60	@	.70
Solid Ledger Stock	1.55	@	1.65
Writing Paper	1.05	@	1.25
No. 1 Books, heavy	1.00	@	1.15
No. 2 Books, light	.90	@	.95
No. 1 New Manila	2.15	@	2.30
No. 1 Old Manila	1.50	@	1.60
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.35	@	1.40
Common Paper	.25	@	.35
No. 1 Mixed Paper	.25	@	.30
Straw Board, Chip	.35	@	.40
Binders Board, Chip	.35	@	.45
Corrugated Board	.50	@	.60
Overissue News	.45	@	.50
Old Newspaper	.25	@	.30

Domestic Rags (Old)

White No. 1—			
Repacked	4.25	@	4.50
Miscellaneous	3.50	@	3.75
M. G.	6.00	@	—
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.60	@	1.80
Black Stockings			
(Export)	3.90	@	4.25
Roofing Stock—			
Foreign No. 1	1.25	@	1.30
Repacked	.80	@	.90
No. 2	.70	@	.75
No. 3 (Roofing)	.30	@	.40
No. 4	.30	@	.40
No. 5A	.70	@	.75
B	.40	@	.60
C	.25	@	.30

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06¾	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¾	@	.06
No. 2 Kraft	.03¾	@	.05
(Less car-freight to Boston)			
Southern Kraft	.03¾	@	.04¼
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¾
Delivered New England points			
News Print Rolls	61.50	@	—
Straw Boards, rolls	.009		52.50
Straw Board in			
Sheets, basis 35s			
to 70s	54.50	@	55.00
Filled News Board	32.50	@	—
Chip Board	30.00	@	—
Chip Board (Special)	32.50	@	—
Single Manila Lined			
Chip	45.00	@	—
Single White, Patent			
Coated News-			
board Bender	65.00	@	80.00
Wood Pulp Board	75.00	@	80.00
Binder Boards	70.00	@	75.00
(F. o. b. Mill)			
Tarred Felts—			
Regular, carload			
lots	65.00	@	—

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.25	@	3.75
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.40	@	2.50
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	—	@	2.25
No. 1 Books, Heavy	1.00	@	—
No. 1 Books, Light	.85	@	—
Crumpled Stitchless			
Book Stock	—	@	.70
Manila Env. Cuttings	2.00	@	2.25
No. 1 Old Manila	—	@	1.00
White Blank News	1.50	@	1.60
Old Kraft	1.30	@	1.35
Print Manila	.75	@	.80
No. 1 Mixed Paper	.20	@	.25
Overissue News	.35	@	.40
Old Newspapers	.37½	@	.40
Box Board, Chip	.50	@	.55
Corrugated Boxes	.40	@	—

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	—	@	1.65
Domestic	1.60	@	—
Manila Rope—			
Foreign	2.75	@	3.00
Domestic	—	@	3.50
Transmission Rope	2.35	@	2.50
Mixed Strings	.75	@	1.00
Jute Wool Strings	1.00	@	—
Jute Carpet Threads	1.00	@	1.10
Scrap Burlaps	1.30	@	1.35
Scrap Sisal	—	@	1.50
Scrap Sisal for shred-			
ding	—	@	1.75
Wool Tares, heavy	—	@	1.40
New Burlap Cutting	1.75	@	2.00
Australian Wool			
Pouches	2.50	@	2.75
Heavy Baling Bag-			
ging	2.00	@	2.10

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.07½	@	.08
New White No. 2	—	@	.06
Silesias No. 1	.06	@	.06¼
New Unbleached	—	@	.09½
Fancy	.04	@	.04½
Washable	.04	@	.04¾
Cottons—According to grades			
Blue Overalls	.06¼	@	.06¾
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04¼
O. D. Khaki	.04½	@	.05
Corduroy	.03	@	.03¼
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.75	@	3.00
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.75	@	1.90
Black Stockings	3.65	@	4.00
Roofing Stock—			
No. 1	1.25	@	1.50
No. 2	.90	@	1.00
No. 3	.85	@	.90
No. 4	.75	@	.85

Foreign Rags
(F. o. b. Boston)

Dark Cottons	.80	@	.90
New No. 1 Shirt Cut-			
tings	8.00	@	8.50
Dutch Blues	—	@	2.00
Lace Curtains	4.00	@	4.25
New Checks & Blues	4.25	@	4.60
Old Fustians	1.65	@	1.75
Old Linsey Garments	1.00	@	1.10

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¾	@	—
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (car-			
loads)	7.50	@	—
No. 2 M. F. (car-			
loads)	7.25	@	—
No. 3 M. F. (car-			
loads)	7.00	@	—
No. 1 S. C. (car-			
loads)	8.00	@	—
No. 2 S. C. (car-			
loads)	7.75	@	—
No. 3 S. C. (car-			
loads)	7.50	@	—
No. 1 Coated and			
Litho	13.25	@	—
No. 2 Coated and			
Litho	12.25	@	—
No. 3 Coated and			
Litho	10.00	@	11.50
Coated tinted	14.50	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
White, No. 2	2.00	@	2.25

(Delivered Toronto)

News, per ton—			
Rolls (contract)	61.50	@	62.00
Sheets	67.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleach-			
ing	60.00	@	—
Sulphite news grade	60.00	@	—
Sulphite, bleached	72.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book			
Shavings	2.85	@	—
White Blk. News	1.60	@	—
Book and Ledger—			
Flat Magazine and			
Book Stock (old)	1.40	@	—
Light and Crum-			
pled Book Stock	1.25	@	—
Ledgers and Writ-			
Solid Ledgers	1.50	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.85	@	—
Strictly Folded	.85	@	—
No. 1 Mixed Paper	.65	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt			
Cuttings	.09¼	@	.10
Fancy Shirt Cuttings	.06	@	.06¼

Advertising matter paged consecutively with text, has been removed here to lessen the bulk of this volume.